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Physical ValuesFail Safe		TURNED ON	
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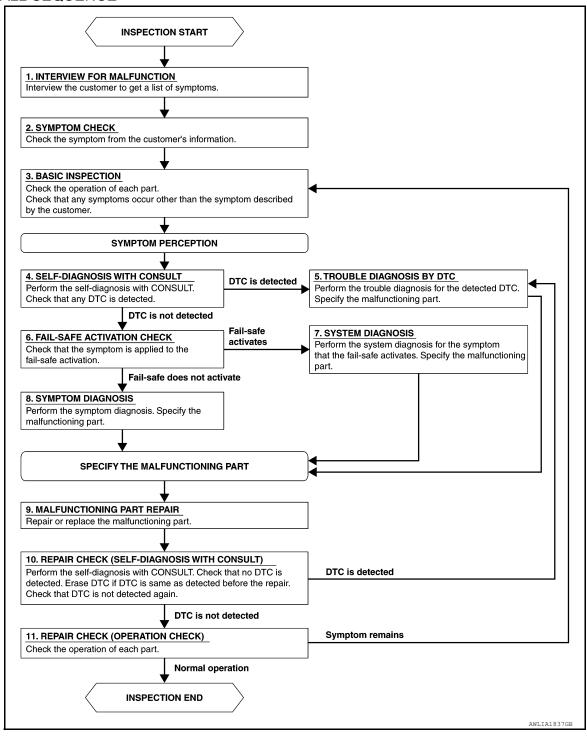
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BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

OVERALL SEQUENCE



DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION > **DETAILED FLOW** Α 1.INTERVIEW FOR MALFUNCTION Find out what the customer's concerns are. В >> GO TO 2. 2.SYMPTOM CHECK Verify the symptom from the customer's information. D >> GO TO 3. 3.BASIC INSPECTION Check the operation of each part. Check that any concerns occur other than those mentioned in the customer interview. >> GO TO 4. F f 4 . SELF-DIAGNOSIS WITH CONSULT Perform the self diagnosis with CONSULT. Check that any DTC is detected. Is any DTC detected? YES >> GO TO 5. NO >> GO TO 6. $oldsymbol{5}$. TROUBLE DIAGNOSIS BY DTC Perform the trouble diagnosis for the detected DTC. Specify the malfunctioning part. >> GO TO 9. 6. FAIL-SAFE ACTIVATION CHECK Determine if the customer's concern is related to fail-safe activation. Does the fail-safe activate? K YES >> GO TO 7. NO >> GO TO 8. **1.**SYSTEM DIAGNOSIS **EXL** Perform the system diagnosis for the system in which the fail-safe activates. Specify the malfunctioning part. M >> GO TO 9. 8.SYMPTOM DIAGNOSIS Perform the symptom diagnosis. Specify the malfunctioning part. >> GO TO 9. 9. MALFUNCTION PART REPAIR Repair or replace the malfunctioning part. Р >> GO TO 10. 10. REPAIR CHECK (SELF-DIAGNOSIS WITH CONSULT) Perform the self diagnosis with CONSULT. Verify that no DTCs are detected. Erase all DTCs detected prior to the repair. Verify that DTC is not detected again.

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Is any DTC detected?

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

YES >> GO TO 5. NO >> GO TO 11.

11. REPAIR CHECK (OPERATION CHECK)

Check the operation of each part.

Does it operate normally?

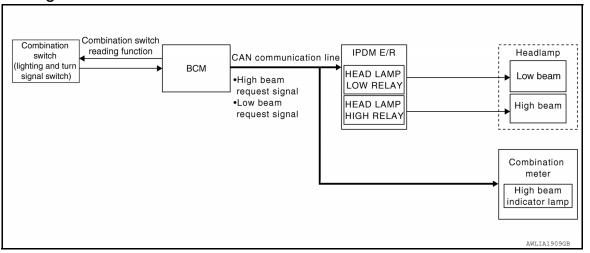
YES >> Inspection End.

NO >> GO TO 3.

SYSTEM DESCRIPTION

HEADLAMP

System Diagram



System Description

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INFOID:0000000008790358

Control of the headlamp system operation is dependent upon the position of the combination switch (lighting and turn signal switch). When the combination switch (lighting and turn signal switch) is placed in the 2nd position, the BCM (body control module) receives input requesting the headlamps and park lamps to illuminate. This input is communicated to the IPDM E/R (intelligent power distribution module engine room) via the CAN communication lines. The CPU (central processing unit) of the IPDM E/R controls the headlamp high and headlamp low relay coils. When energized, these relays direct power to the respective headlamps, which then illuminate.

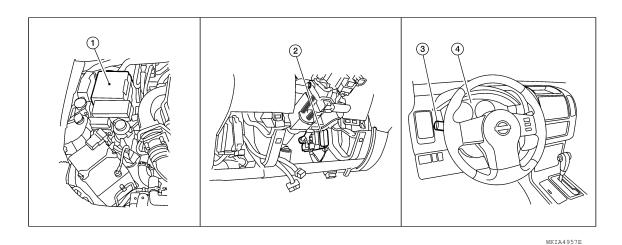
HIGH BEAM OPERATION/FLASH-TO-PASS OPERATION

With the combination switch (lighting and turn signal switch) in the 2ND position and placed in HIGH position, the BCM receives input requesting the headlamp high beams to illuminate. The flash to pass feature can be used any time and also sends a signal to the BCM. This input is communicated to the IPDM E/R via the CAN communication lines. The CPU of the combination meter controls the ON/OFF status off the HIGH BEAM indicator. The CPU of the IPDM E/R controls the headlamp high relay coil which supplies power to the high beam headlamps.

The combination meter receives a high beam request signal (ON) via the CAN communication lines and turns the high beam indicator lamp ON.

Component Parts Location

INFOID:0000000008790360



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HEADLAMP

< SYSTEM DESCRIPTION >

- 1. IPDM E/R E122, E123, E124
- BCM M18, M20 (view with lower instru- 3. ment panel LH removed)
- Combination switch (lighting and turn signal switch) M28

4. Combination meter M24

Component Description

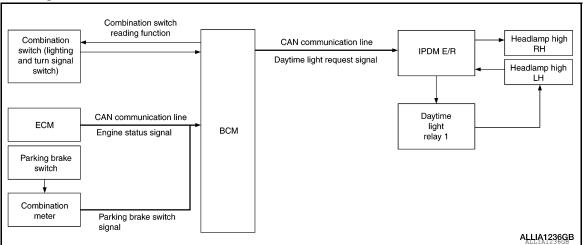
Part name	Description
ВСМ	 Receives combination switch (lighting and turn signal switch) request via BCM combination switch reading function. Sends headlamp high/low request signal to the IPDM E/R.
IPDM E/R	Activates the headlamp high and headlamp low relays upon request from the BCM.
Combination switch (lighting and turn signal switch)	Outputs lighting requests to the BCM.

DAYTIME RUNNING LIGHT SYSTEM

< SYSTEM DESCRIPTION >

DAYTIME RUNNING LIGHT SYSTEM

System Diagram



System Description

The headlamp system for Canada vehicles is equipped with a daytime light control that activates the high beam headlamps at approximately half illumination whenever the engine is operating. If the parking brake is applied before the engine is started the daytime lights will not be illuminated. The daytime lights will illuminate once the parking brake is released. Thereafter, the daytime lights will continue to operate when the parking brake is applied.

OPERATION

The BCM monitors inputs from the parking brake switch and the combination switch (lighting and turn signal switch) to determine when to activate the daytime light system. The BCM sends a daytime light request to the IPDM E/R via the CAN communication lines. The IPDM E/R grounds the daytime light relay 1 which in turn, provides power to the ground side of the LH high beam lamp. Power flows backward through the LH high beam lamp to the IPDM E/R, through the high beam fuses, through the RH high beam lamp circuit to the RH high beam lamp and on to ground. The high beam lamps are wired in series which causes them to illuminate at a reduced intensity.

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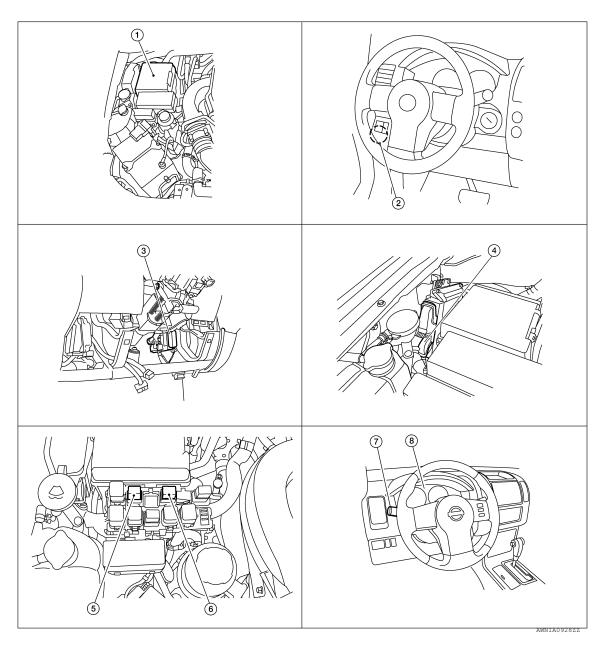
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Component Parts Location

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- 1. IPDM E/R E119, E122, E123, E124
- ECM E16 (view with ECM cover removed)
- 7. Combination switch (lighting and turn 8. signal switch) M28
- 2. Parking brake switch B84
- 5. Daytime light relay 1 E103
 - 8. Combination meter M24
- BCM M18, M20 (view with lower instrument panel LH removed)
- 6. Daytime light relay 2 E104

Component Description

Part name	Description
ВСМ	 Receives combination switch (lighting and turn signal switch) inputs via BCM combination switch reading function. Receives park brake applied input from the park brake switch. Receives engine running status from the ECM via CAN communication.

DAYTIME RUNNING LIGHT SYSTEM

< SYSTEM DESCRIPTION >

IPDM E/R	Receives daytime light request from the BCM and activates the daytime light relay.
Combination switch (lighting and turn signal switch)	Outputs lighting requests to the BCM.
Parking brake switch	Outputs parking brake status to the combination meter which forwards that information to the BCM via CAN communication.
FCM	Outputs engine running status to the BCM

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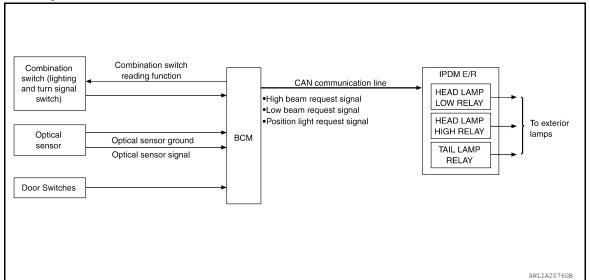
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AUTO LIGHT SYSTEM

System Diagram

INFOID:0000000008790366



System Description

INFOID:0000000008790367

The auto light control system has an optical sensor that detects outside brightness.

When the combination switch (lighting and turn signal switch) is in AUTO position, it automatically turns ON/ OFF the parking, license plate, tail and headlamps in accordance with the ambient light. Sensitivity can be adjusted in four steps. For the details, refer to BCS-18, "HEADLAMP: CONSULT Function (BCM - HEADLAMP)".

AUTO LIGHT OPERATION

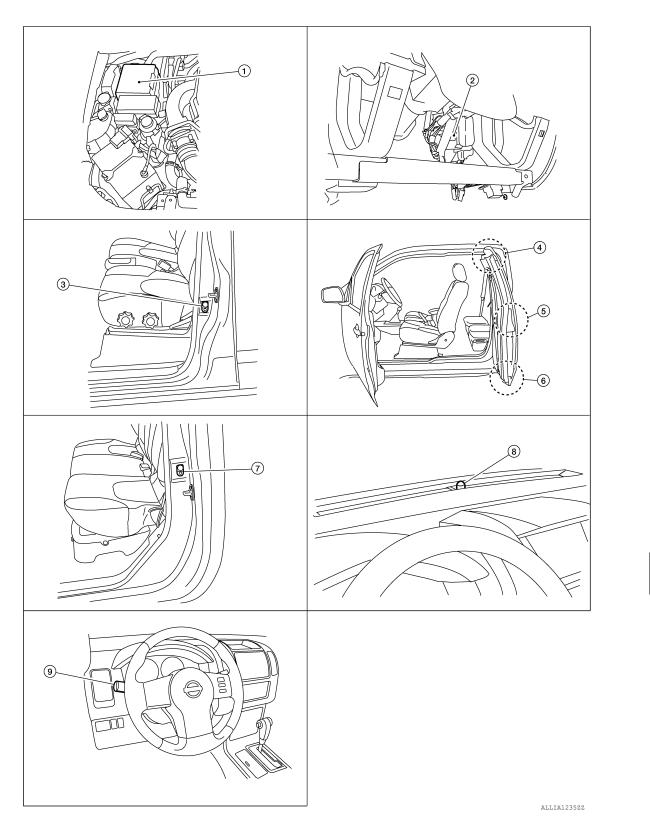
The auto light system operates the low beam and high beam headlamps, parking lamps, tail lamps and license plate lamps. The BCM monitors the combination switch (lighting and turn signal switch) position as a part of the BCM combination switch reading function. When the combination switch (lighting and turn signal switch) is in the AUTO position, the BCM automatically turns the lamps ON/OFF according to ambient light brightness. When the key is turned OFF and all doors are closed, the auto light system keeps the headlamps ON for 45 seconds.

NOTE:

Timing for when lamps turn ON/OFF can be changed by the CONSULT. Refer to <u>BCS-18</u>, "<u>HEADLAMP</u>: <u>CONSULT Function</u> (BCM - HEADLAMP)".

Component Parts Location

INFOID:0000000008790368



1. IPDM E/R

2. BCM (view with lower instrument panel 3. LH removed)

Front door switch LH (Crew Cab) (RH similar)

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AUTO LIGHT SYSTEM

< SYSTEM DESCRIPTION >

- Rear door switch upper LH (King Cab) 5. (RH similar)
- Front door switch LH (King Cab) (RH similiar)
- 6. Rear door switch lower LH (King Cab)

- 7. Rear door switch LH (Crew Cab) (RH 8. similar)
 - 8. Optical Sensor

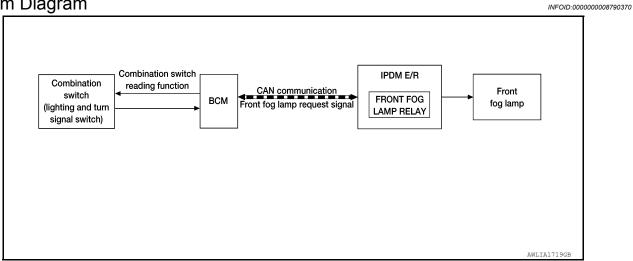
9. Combination switch

Component Description

Part name	Description
BCM	BCM (Body Control Module) controls auto light operation according to signals from optical sensor, lighting switch and ignition switch.
IPDM E/R	IPDM E/R (Intelligent Power Distribution Module Engine Room) operates parking, license plate, tail and headlamps according to CAN communication signals from BCM.
Combination switch (lighting and turn signal switch)	The lighting switch outputs lighting requests to the BCM.
Optical sensor	Optical sensor detects ambient brightness and converts light (lux) to voltage, then sends the optical sensor signal to BCM.
Door switches	Detects door open/closed status and forwards that status to the BCM.

FRONT FOG LAMP

System Diagram



System Description

INFOID:0000000008790371

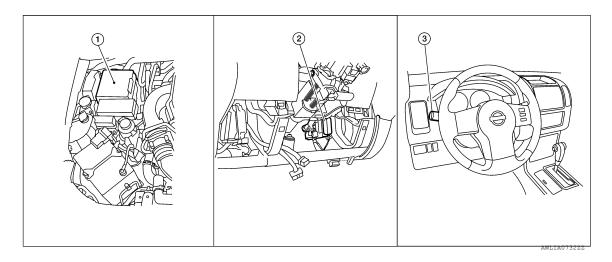
The front fog lamps are activated with the combination switch (lighting and turn signal switch). The combination switch (lighting and turn signal switch) signal to the BCM is monitored with the BCM combination switch reading function. When the fog lamps are turned ON with the combination switch (lighting and turn signal switch), the BCM sends a front fog lamp request signal via CAN communication lines to the IPDM E/R. The IPDM E/R grounds the front fog lamp relay coil to activate the front fog lamps.

FRONT FOG LAMP OPERATION

When the combination switch (lighting and turn signal switch) is in front fog lamp ON position and also in 1ST or 2ND position or AUTO (if equipped) position (headlamp is ON), the BCM detects FR FOG ON and the HEAD LAMP1 or 2 ON. The BCM sends a front fog lamp request ON signal via the CAN communication lines to the IPDM E/R. The IPDM E/R then turns ON the front fog lamp relay sending power to the front fog lamps.

Component Parts Location

INFOID:0000000008790372



IPDM E/R E122, E123, E124

 BCM M18, M20 (view with lower instru- 3. ment panel LH removed) Combination switch (lighting and turn signal switch) M28

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FRONT FOG LAMP

< SYSTEM DESCRIPTION >

Component Description

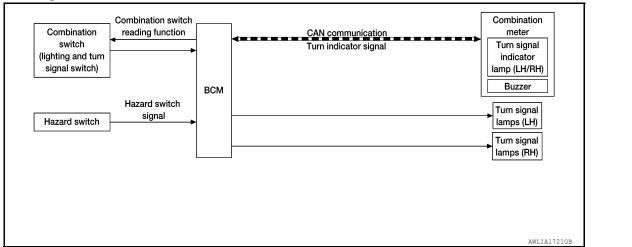
Part name	Description
BCM	 Receives lighting switch requests via BCM combination switch reading function. Sends headlamp high/low request signal to the IPDM E/R.
IPDM E/R	Activates the front fog lamp relay upon request from the BCM.
Combination switch (lighting and turn signal switch)	Outputs lighting requests to the BCM.

TURN SIGNAL AND HAZARD WARNING LAMPS

< SYSTEM DESCRIPTION >

TURN SIGNAL AND HAZARD WARNING LAMPS

System Diagram



System Description

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INFOID:0000000008790374

TURN SIGNAL OPERATION

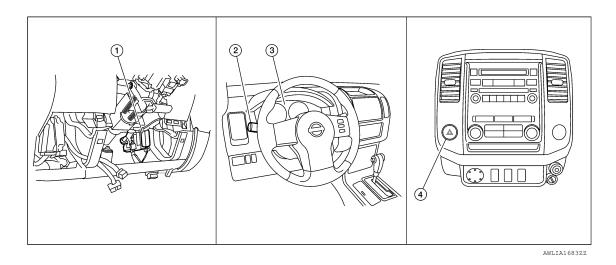
When the combination switch (lighting and turn signal switch) is in LH or RH position with the ignition switch in ON position, the BCM detects the TURN RH or TURN LH ON request. The BCM outputs the flasher signal to the respective turn signal lamp. The BCM also sends a turn indicator signal ON request via the CAN communication lines to the combination meter. The combination meter then activates the appropriate turn signal indicator and audible buzzer.

HAZARD LAMP OPERATION

When the hazard switch is in ON position, the BCM detects the hazard switch signal ON. The BCM outputs the flasher signal (right and left). The BCM sends a hazard indicator signal ON request via the CAN communication lines to the combination meter. The combination meter then activates the hazard indicator and audible buzzer.

Component Parts Location

INFOID:0000000008790376



- BCM M18, M20 (view with lower instrument panel LH removed)
- Hazard switch M55

signal switch) M28

Combination switch (lighting and turn 3. Combination meter M24

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TURN SIGNAL AND HAZARD WARNING LAMPS

< SYSTEM DESCRIPTION >

Component Description

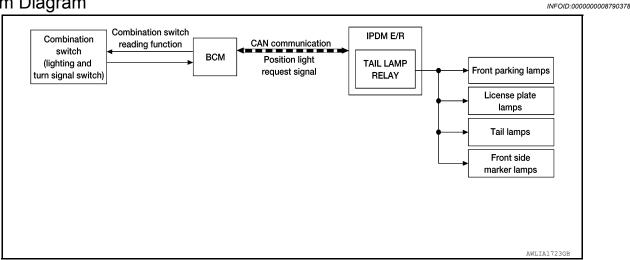
Part name	Description
BCM	Controls turn signal and hazard flasher operation.
Combination switch (lighting and turn signal switch)	Lighting and turn signal switch requests are output to the BCM.
Hazard switch	Hazard flasher request signal is output to the BCM.
Combination meter	Outputs turn and hazard indicator as requested by the BCM.

PARKING, LICENSE PLATE AND TAIL LAMPS

< SYSTEM DESCRIPTION >

PARKING. LICENSE PLATE AND TAIL LAMPS

System Diagram



System Description

INFOID:0000000008790379

PARKING. LICENCE PLATE AND TAIL LAMPS OPERATION

When the combination switch (lighting and turn signal switch) is in 1ST position, BCM detects the LIGHTING SWITCH 1ST POSITION ON. The BCM sends a parking light ON request via the CAN communication lines to the IPDM E/R. The IPDM E/R then activates the tail lamp relay which sends power to the parking and instrument illumination circuits.

EXTERIOR LAMP BATTERY SAVER CONTROL

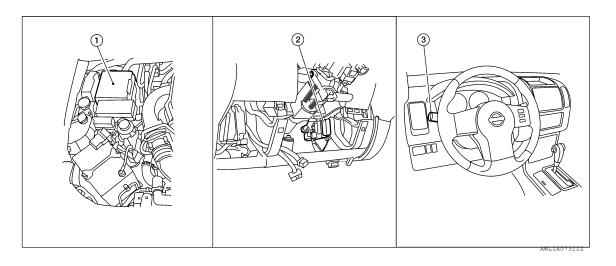
With the combination switch (lighting and turn signal switch) in the 2ND position and the ignition switch is turned from ON or ACC to OFF, the battery saver feature is activated.

Under this condition, the headlamps remain illuminated for 5 minutes unless the combination switch (lighting and turn signal switch) position is changed. If the combination switch (lighting and turn signal switch) position is changed, then the headlamps are turned off.

This setting can be changed by CONSULT. Refer to BCS-18, "HEADLAMP: CONSULT Function (BCM -HEADLAMP)".

Component Parts Location

INFOID:0000000008790380



IPDM E/R E121, E122, E123, E124

BCM M18, M20 (view with lower instru- 3. ment panel LH removed)

Combination switch (lighting and turn signal switch) M28

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PARKING, LICENSE PLATE AND TAIL LAMPS

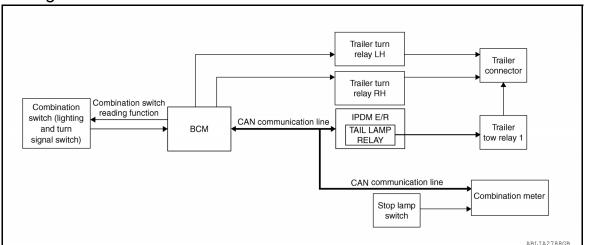
< SYSTEM DESCRIPTION >

Component Description

Part name	Description
ВСМ	 Receives combination switch (lighting and turn signal switch) requests via BCM combination switch reading function. Sends parking light request signal to the IPDM E/R.
IPDM E/R	Activates the tail lamp relay upon request of the BCM.
Combination switch (lighting and turn signal switch)	Outputs lighting requests to the BCM.

TRAILER TOW

System Diagram



System Description

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TRAILER TAIL LAMP OPERATION

The trailer tail lamps are controlled by the trailer tow relay 1 that is located on the front of the IPDM E/R. With the combination switch (lighting and turn signal switch) in the 1st position, the BCM detects the LIGHTING SWITCH 1ST POSITION ON. The BCM sends a parking light ON request via the CAN communication lines to the IPDM E/R. The IPDM E/R then activates the tail lamp relay which activates the trailer tow relay 1 and sends power to the trailer connector.

TRAILER TURN SIGNAL LAMP OPERATION

The trailer turn signal lamps are controlled by the BCM. When the combination switch (lighting and turn signal switch) is in the LH or RH position with the ignition switch ON, the combination switch (lighting and turn signal switch) sends a signal to the BCM. The BCM detects the TURN RH or TURN LH ON request. The BCM sends a control signal to the respective trailer turn relay which sends power to the trailer connector.

TRAILER HAZARD LAMP OPERATION

The trailer hazard lamps are controlled by the BCM. When the hazard switch is pressed, the BCM detects the the hazard ON request. The BCM then sends a control signal to both trailer turn relays which sends power to the trailer connector.

TRAILER BRAKE LAMP OPERATION

The trailer brake lamps are controlled by the BCM. When the brake pedal is depressed, the combination meter receives a stop lamp switch signal from the stop lamp switch. The combination meter then sends the brake signal to the BCM via the CAN communication lines. The BCM then sends a control signal to both trailer turn relays which sends power to the trailer connector.

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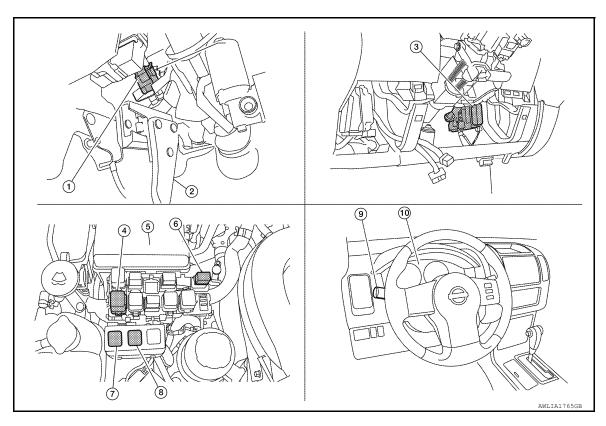
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Component Parts Location

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- Stop lamp switch E38 (with M/T) or E39 (with A/T) (view with lower instrument panel LH removed)
- Trailer turn relay LH E164
- Trailer tow relay 2 E228 7.
- 10. Combination meter M24

- Brake pedal
- IPDM E/R E121, E122, E124
- 8. Trailer tow relay 1 E227
- BCM, M18, M19, M20 (view with lower instrument panel LH removed)
- 6. Trailer turn relay RH E165
- Combination switch (lighting and turn signal switch) M28

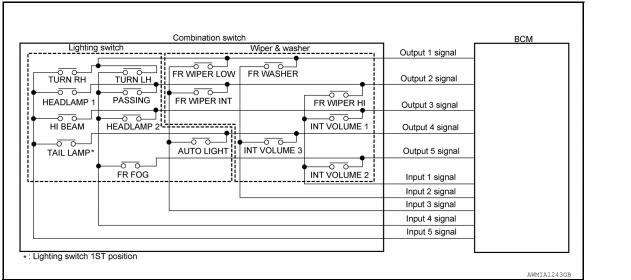
Component Description

Part name	Description
ВСМ	 Receives lighting and turn signal requests from combination switch (lighting and turn signal switch). Receives stop lamp signal requests from combination meter via CAN communication. Sends lighting signal request to the IPDM E/R to control the tail lamp relay via CAN communication. Sends turn/hazard/brake control signal to the trailer turn relays.
IPDM E/R	Activates the tail lamp relay upon request from the BCM via CAN communication.
Combination meter	Receives stop lamp switch signal from stop lamp switch. Sends stop lamp signal request to the BCM via CAN communication.
Combination switch (lighting and turn signal switch)	Outputs lighting and turn signal requests to the BCM.

< SYSTEM DESCRIPTION >

COMBINATION SWITCH READING SYSTEM

System Diagram



System Description

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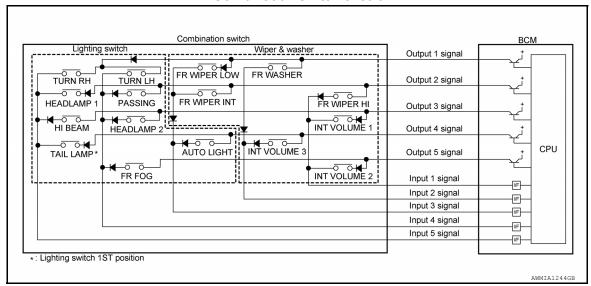
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OUTLINE

- BCM reads the status of the combination switch (light, turn signal, wiper and washer) and recognizes the status of each switch.
- BCM has a combination of 5 output terminals (OUTPUT 1 5) and 5 input terminals (INPUT 1 5) and reads a maximum of 20 switch states.

COMBINATION SWITCH MATRIX

Combination switch circuit



Combination switch INPUT-OUTPUT system list

System	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
OUTPUT 1	_	FR WASHER	FR WIPER LOW	TURN LH	TURN RH
OUTPUT 2	FR WIPER HI	_	FR WIPER INT	PASSING	HEADLAMP 1
OUTPUT 3	INT VOLUME 1	_	_	HEADLAMP 2	HI BEAM

Revision: December 2012 EXL-23 2013 Frontier

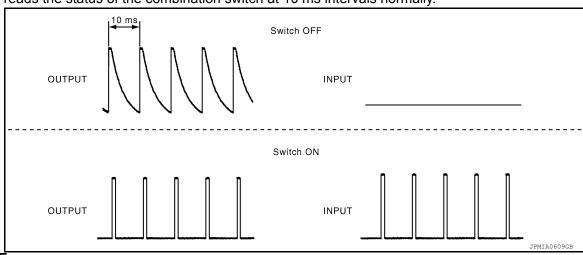
< SYSTEM DESCRIPTION >

System	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
OUTPUT 4	_	INT VOLUME 3	AUTO LIGHT	_	TAIL LAMP
OUTPUT 5	INT VOLUME 2	_	_	FR FOG	_

COMBINATION SWITCH READING FUNCTION

Description

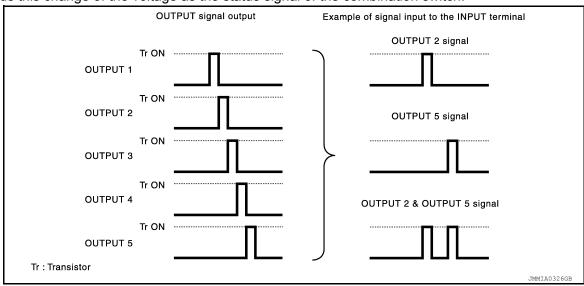
• BCM reads the status of the combination switch at 10 ms intervals normally.



NOTE:

BCM reads the status of the combination switch at 60 ms intervals when BCM is controlled at low power consumption control mode.

- BCM operates as follows and judges the status of the combination switch.
- It operates the transistor on OUTPUT side in the following order: OUTPUT 1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5, and outputs voltage waveform.
- The voltage waveform of OUTPUT corresponding to the formed circuit is input into the interface on INPUT side if any (1 or more) switches are ON.
- It reads this change of the voltage as the status signal of the combination switch.



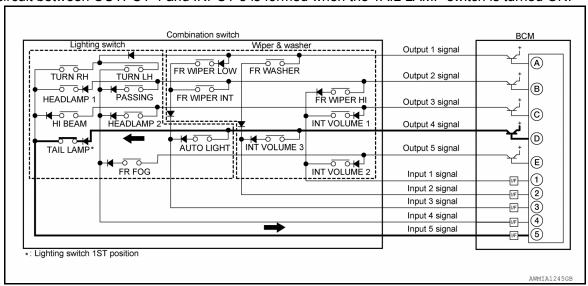
Operation Example

In the following operation example, the combination of the status signals of the combination switch is replaced as follows: INPUT 1 - 5 to "1 - 5" and OUTPUT 1 - 5 to "A - E".

Example 1: When a switch (TAIL LAMP) is turned ON

< SYSTEM DESCRIPTION >

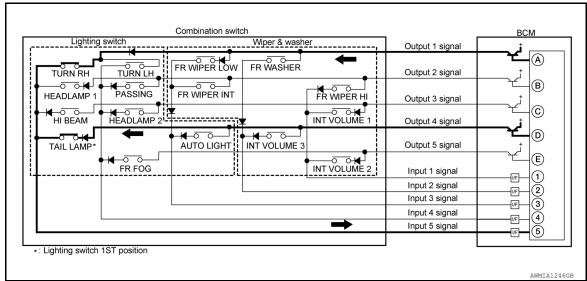
The circuit between OUTPUT 4 and INPUT 5 is formed when the TAIL LAMP switch is turned ON.



- BCM detects the combination switch status signal "5D" when the signal of OUTPUT 4 is input to INPUT 5.
- BCM judges that the TAIL LAMP switch is ON when the signal "5D" is detected.

Example 2: When some switches (TURN RH, TAIL LAMP) are turned ON

• The circuits between OUTPUT 1 and INPUT 5 and between OUTPUT 4 and INPUT 5 are formed when the TURN RH switch and TAIL LAMP switch are turned ON.



- BCM detects the combination switch status signal "5AD" when the signals of OUTPUT 1 and OUTPUT 4 are input to INPUT 5.
- BCM judges that the TURN RH switch and TAIL LAMP switch are ON when the signal "5AD" is detected.

WIPER INTERMITTENT DIAL POSITION SETTING (FRONT WIPER INTERMITTENT OPERATION) BCM judges the wiper intermittent dial 1 - 7 by the status of INT VOLUME 1, 2, and 3 switches.

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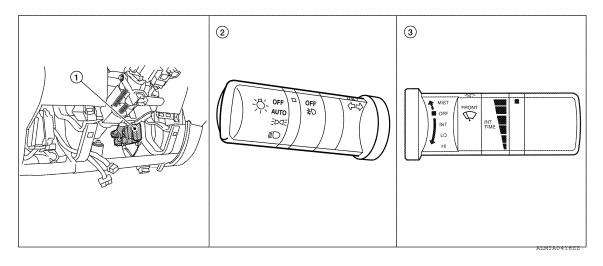
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< SYSTEM DESCRIPTION >

Wiper intermittent	Intermittent	INT	VOLUME switch ON/OFF sta	atus
dial position	operation delay interval	INT VOLUME 1	INT VOLUME 2	INT VOLUME 3
1	Short	ON	ON	ON
2	1	ON	ON	OFF
3		ON	OFF	OFF
4		OFF	OFF	OFF
5		OFF	OFF	ON
6		OFF	ON	ON
7	Long	OFF	ON	OFF

Component Parts Location



- 1. BCM M18, M19, M20 (view with low- 2. er instrument panel LH removed)
- Combination switch (lighting and turn signal switch) M28
- 3. Combination switch (wiper and washer switch) M28

DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

COMMON ITEM: CONSULT Function (BCM - COMMON ITEM)

INFOID:0000000009241305

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APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

Direct Diagnostic Mode	Description
Ecu Identification	The BCM part number is displayed.
Self Diagnostic Result	The BCM self diagnostic results are displayed.
Data Monitor	The BCM input/output data is displayed in real time.
Active Test	The BCM activates outputs to test components.
Work support	The settings for BCM functions can be changed.
Configuration	 The vehicle specification can be read and saved. The vehicle specification can be written when replacing BCM.
CAN Diag Support Mntr	The result of transmit/receive diagnosis of CAN communication is displayed.

SYSTEM APPLICATION

BCM can perform the following functions.

				Direct [Diagnosti	c Mode		
System	Sub System	Ecu Identification	Self Diagnostic Result	Data Monitor	Active Test	Work support	Configuration	CAN Diag Support Mntr
Door lock	DOOR LOCK			×	×	×		
Rear window defogger	REAR DEFOGGER			×	×			
Warning chime	BUZZER			×	×			
Interior room lamp timer	INT LAMP			×	×	×		
Remote keyless entry system	MULTI REMOTE ENT			×	×	×		
Exterior lamp	HEAD LAMP			×	×	×		
Wiper and washer	WIPER			×	×	×		
Turn signal and hazard warning lamps	FLASHER			×	×			
Air conditioner	AIR CONDITIONER			×				
Combination switch	COMB SW			×				
BCM	BCM	×	×			×	×	×
Immobilizer	IMMU		×	×	×			
Interior room lamp battery saver	BATTERY SAVER			×	×	×		
Vehicle security system	THEFT ALM			×	×	×		
RAP system	RETAINED PWR			×	×	×		
Signal buffer system	SIGNAL BUFFER			×	×			
TPMS	AIR PRESSURE MONITOR		×	×	×	×		
Panic alarm system	PANIC ALARM				×			

HEADLAMP

DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

HEADLAMP : CONSULT Function (BCM - HEADLAMP)

INFOID:0000000009241306

DATA MONITOR

Monitor Item [Unit]	Description
IGN ON SW [On/Off]	Indicates condition of ignition switch ON position.
ACC ON SW [On/Off]	Indicates condition of ignition switch ACC position.
HI BEAM SW [On/Off]	
HEAD LAMP SW 1 [On/Off]	
HEAD LAMP SW 2 [On/Off]	
LIGHT SW 1ST [On/Off]	Indicates condition of combination switch.
AUTO LIGHT SW [On/Off]	
PASSING SW [On/Off]	
FR FOG SW [On/Off]	
DOOR SW-DR [On/Off]	Indicates condition of front door switch LH.
DOOR SW-AS [On/Off]	Indicates condition of front door switch RH.
DOOR SW-RR [On/Off]	Indicates condition of rear door switch RH.
DOOR SW-RL [On/Off]	Indicates condition of rear door switch LH.
TURN SIGNAL R [On/Off]	Indicates condition of combination switch.
TURN SIGNAL L [On/Off]	Indicates condition of combination switch.
CARGO LAMP SW [On/Off]	Indicates condition of cargo lamp switch.
OPTICAL SENSOR [V]	Indicates voltage signal from optical sensor.

ACTIVE TEST

Test Item	Description
TAIL LAMP	This test is able to check tail lamp operation [Off/On].
HEAD LAMP	This test is able to check head lamp operation [Off/Lo/Hi].
FR FOG LAMP	This test is able to check front fog lamp operation [Off/On].
CARGO LAMP	This test is able to check cargo lamp operation [Off/On].

WORK SUPPORT

Support Item	Setting	Description
BATTERY SAVER SET	Off	Exterior lamp battery saver function OFF.
BATTERT GAVER GET	On*	Exterior lamp battery saver function ON.
	MODE4	Less sensitive setting than normal setting (Turns ON later than normal operation).
CUSTOM A/LIGHT SETTING	MODE3	More sensitive setting than MODE 2 (Turns ON earlier than MODE 2).
	MODE2	More sensitive setting than normal setting (Turns ON earlier than normal operation).
	MODE1*	Normal.

DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

Support Item	Se	tting	Description
	MODE8	180 sec	
	MODE7	150 sec	
W. DELAY 057	MODE6	120 sec	
	MODE5	90 sec	Sets delay timer function operation time
ILL DELAY SET	MODE4	60 sec	(All doors closed).
	MODE3	30 sec	
	MODE2	OFF	
	MODE1*	45 sec	_

^{*:} Initial setting

FLASHER

FLASHER: CONSULT Function (BCM - FLASHER)

INFOID:0000000009241307

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DATA MONITOR

Monitor Item [Unit]	Description
IGN ON SW [On/Off]	Indicates condition of ignition switch ON position.
HAZARD SW [On/Off]	Indicates condition of hazard switch.
TURN SIGNAL R [On/Off]	Indicates condition of turn signal function of combination switch.
TURN SIGNAL L [On/Off]	- indicates condition of turn signal function of combination switch.
BRAKE SW [On/Off]	Indicates condition of brake switch.

ACTIVE TEST

Test Item	Description	-
FLASHER	This test is able to check turn signal lamp operation [Off/LH/RH].	_

COMB SW

COMB SW: CONSULT Function (BCM - COMB SW)

INFOID:0000000009241308

DATA MONITOR

		EXL
Monitor Item [Unit]	Description	
TURN SIGNAL R [On/Off]	Indicates condition of turn signal exerction of combination quitab	
TURN SIGNAL L [On/Off]	Indicates condition of turn signal operation of combination switch.	M
HI BEAM SW [On/Off]	Indicates condition of hi beam operation of combination switch.	
HEAD LAMP SW 1 [On/Off]	Indicates condition of bondlows anaration of combination quitab	N
HEAD LAMP SW 2 [On/Off]	Indicates condition of headlamp operation of combination switch.	
LIGHT SW 1ST [On/Off]	Indicates condition of lighting operation of combination switch.	
PASSING SW [On/Off]	Indicates condition of passing switch operation of combination switch.	0
AUTO LIGHT SW [On/Off]	Indicates condition of auto light operation of combination switch.	
FR FOG SW [On/Off]	Indicates condition of front fog light operation of combination switch.	P
FR WIPER HI [On/Off]		
FR WIPER LOW [On/Off]	Indicates condition of front wiper operation of combination switch.	
FR WIPER INT [On/Off]		
FR WASHER SW [On/Off]	Indicates condition of front washer operation of combination switch.	
INT VOLUME [1 - 7]	Indicates condition of intermittent wiper operation of combination switch.	

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000009241309

AUTO ACTIVE TEST

Description

In auto active test mode, the IPDM E/R sends a drive signal to the following systems to check their operation.

- · Oil pressure low warning indicator
- Oil pressure gauge (if equipped)
- · Rear window defogger
- · Front wipers
- · Tail, license and parking lamps
- Front fog lamps (if equipped)
- Headlamps (Hi, Lo)
- A/C compressor (magnetic clutch) (if equipped)
- Cooling fan

Operation Procedure

Close the hood and front door RH, and lift the wiper arms from the windshield (to prevent windshield damage due to wiper operation).

NOTE:

When auto active test is performed with hood opened, sprinkle water on windshield before hand.

- 2. Turn ignition switch OFF.
- 3. Turn the ignition switch ON and, within 20 seconds, press the front door switch LH 10 times. Then turn the ignition switch OFF.
- 4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test
- 5. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE

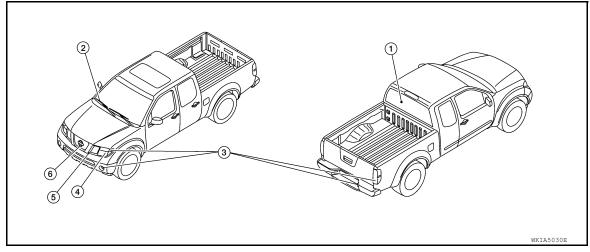
When auto active test mode has to be cancelled halfway through test, turn ignition switch OFF.

CAUTION:

- If auto active test mode cannot be actuated, check door switch system. Refer to <u>DLK-27</u>, "<u>KING CAB</u> : <u>Description</u>" (king cab) or <u>DLK-29</u>, "<u>CREW CAB</u> : <u>Description</u>" (crew cab).
- Do not start the engine.

Inspection in Auto Active Test Mode

When auto active test mode is actuated, the following 7 steps are repeated 3 times.



Item Number	Test Item	Operation Time/Frequency
1	Rear window defogger (Crew cab only)	10 seconds
2	Front wipers	LOW 5 seconds then HIGH 5 seconds
3	Tail, license plate, front fog and parking lamps	10 seconds

< SYSTEM DESCRIPTION >

Item Number	Test Item	Operation Time/Frequency
4	Headlamps	Low ON for 10 seconds, then High ON-OFF five times.
5	A/C compressor (magnet clutch) (if equipped)	ON-OFF 5 times
6	Cooling fan	LOW 5 seconds then HIGH 5 seconds

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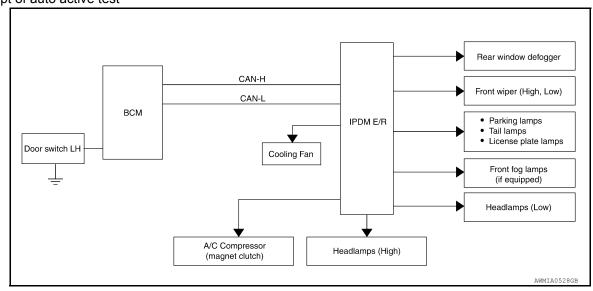
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Concept of auto active test



- IPDM E/R starts the auto active test with the door switch signals transmitted by BCM via CAN communication. Therefore, the CAN communication line between IPDM E/R and BCM is considered normal if the auto active test starts successfully.
- The auto active test facilitates troubleshooting if any systems controlled by IPDM E/R cannot be operated.

Diagnosis chart in auto active test mode

Symptom	Inspection contents		Possible cause	
Oil pressure low warning indicator does not operate	Perform auto active test. Does the oil pressure low warning indicator operate?	YES	IPDM E/R signal input circuit ECM signal input circuit CAN communication signal between ECM and combination meter	
		NO	CAN communication signal between IPDM E/R, BCM and combination meter	
	Perform auto active test.	YES	IPDM E/R signal input circuit	
Oil pressure gauge does not operate	Does the oil pressure gauge operate?	NO	CAN communication signal between IPDM E/R, BCM and combination meter	
		YES	BCM signal input circuit	
Rear window defogger does not operate	Perform auto active test. Does the rear window defogger operate?	NO	Harness or connector between front air control and BCM CAN communication signal between BCM and IPDM E/R	

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< SYSTEM DESCRIPTION >

Symptom	Inspection contents		Possible cause
		YES	BCM signal input system
Any of the following components do not operate Front wipers Tail lamps License plate lamps Parking lamps Front fog lamps (if equipped) Headlamps (Hi, Lo)	Perform auto active test. Does the applicable system operate?	NO	Lamp or front wiper motor malfunction Lamp or front wiper motor ground circuit Harness or connector between IPDM E/R and applicable system IPDM E/R (integrated relay malfunction)
A/C compressor does not approte	Perform auto active test. Does the A/C compressor op-	YES	BCM signal input circuit CAN communication signal between BCM and ECM CAN communication signal between ECM and IPDM E/R
A/C compressor does not operate	erate?	NO	Magnetic clutch malfunction Harness or connector between IPDM E/R and magnetic clutch IPDM E/R (integrated relay malfunction)
		YES	ECM signal input circuit CAN communication signal between ECM and IPDM E/R
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	NO	Cooling fan motor malfunction Harness or connector between IPDM E/R and cooling fan IPDM E/R (integrated relay malfunction)

CONSULT Function (IPDM E/R)

INFOID:0000000009241310

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with IPDM E/R.

Direct Diagnostic Mode	Description	
Self Diagnostic Result	The IPDM E/R self diagnostic results are displayed.	
Data Monitor	The IPDM E/R input/output data is displayed in real time.	
Active Test	The IPDM E/R activates outputs to test components.	
CAN Diag Support Mntr	The result of transmit/receive diagnosis of CAN communication is displayed.	

SELF DIAGNOSTIC RESULT

Refer to PCS-21, "DTC Index".

DATA MONITOR

Monitor Item [Unit]	Main Signals	Description
MOTOR FAN REQ [1/2/3/4]	×	Indicates cooling fan speed signal received from ECM on CAN communication line
AC COMP REQ [On/Off]	×	Indicates A/C compressor request signal received from ECM on CAN communication line

< SYSTEM DESCRIPTION >

Monitor Item [Unit]	Main Signals	Description
TAIL&CLR REQ [On/Off]	×	Indicates position light request signal received from BCM on CAN communication line
HL LO REQ [On/Off]	×	Indicates low beam request signal received from BCM on CAN communication line
HL HI REQ [On/Off]	×	Indicates high beam request signal received from BCM on CAN communication line
FR FOG REQ [On/Off]	×	Indicates front fog light request signal received from BCM on CAN communication line
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Indicates front wiper request signal received from BCM on CAN communication line
WIP AUTO STOP [STOP P/ACT P]	×	Indicates condition of front wiper auto stop signal
WIP PROT [Off/BLOCK]	×	Indicates condition of front wiper fail-safe operation
ST RLY REQ [On/Off]		Indicates starter request signal received from ECM on CAN communication line
IGN RLY [On/Off]	×	Indicates condition of ignition relay
RR DEF REQ [On/Off]	×	Indicates rear defogger request signal received from BCM on CAN communication line
OIL P SW [Open/Close]		Indicates condition of oil pressure switch
DTRL REQ [Off]		Indicates daytime light request signal received from BCM on CAN communication line
THFT HRN REQ [On/Off]		Indicates theft warning horn request signal received from BCM on CAN communication line
HORN CHIRP [On/Off]		Indicates horn reminder signal received from BCM on CAN communication line

ACTIVE TEST

Description	
This test is able to check rear defogger operation [On/Off].	
This test is able to check wiper motor operation [Hi/Lo/Off].	
This test is able to check cooling fan operation [4/3/2/1].	
This test is able to check external lamp operation [Fog/Hi/Lo/TAIL/Off].	
This test is able to check horn operation [On].	
	This test is able to check rear defogger operation [On/Off]. This test is able to check wiper motor operation [Hi/Lo/Off]. This test is able to check cooling fan operation [4/3/2/1]. This test is able to check external lamp operation [Fog/Hi/Lo/TAIL/Off].

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POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

DTC/CIRCUIT DIAGNOSIS

POWER SUPPLY AND GROUND CIRCUIT BCM (BODY CONTROL MODULE)

BCM (BODY CONTROL MODULE): Diagnosis Procedure

INFOID:0000000009282403

Regarding Wiring Diagram information, refer to BCS-43, "Wiring Diagram".

1. CHECK FUSES AND FUSIBLE LINK

Check that the following fuses and fusible link are not blown.

Terminal No.	Signal name	Fuses and fusible link No.
57	Pottory newer aunnhy	21 (10A)
70	Battery power supply	G (50A)
11	Ignition ACC or ON	4 (10A)
38	Ignition ON or START	1 (10A)

Is the fuse blown?

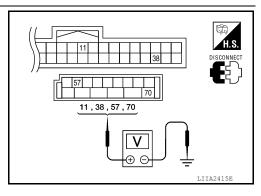
YES >> Replace the blown fuse or fusible link after repairing the affected circuit.

NO >> GO TO 2

2. CHECK POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect BCM.
- Check voltage between BCM harness connector and ground.

Connector	Terminals		Power	Condition	Voltage (V) (Ap-
	(+)	(-)	source	Condition	prox.)
M18	11	Ground	ACC power supply	Ignition switch ACC or ON	Battery voltage
	38	Ground	Ignition power supply	Ignition switch ON or START	Battery voltage
M20	57	Ground	Battery power supply	Ignition switch OFF	Battery voltage
IVI20	70	Ground	Battery power supply	Ignition switch OFF	Battery voltage



Is the measurement value normal?

YES >> GO TO 3

NO >> Repair or replace harness.

 $oldsymbol{3}$. CHECK GROUND CIRCUIT

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

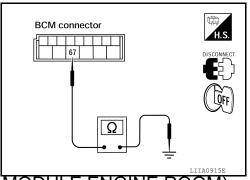
Check continuity between BCM harness connector and ground.

В	CM		Continuity
Connector	Terminal	Ground	Continuity
M20	67		Yes

Does continuity exist?

YES >> Inspection End.

NO >> Repair or replace harness.



IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) : Diagnosis Procedure

Regarding Wiring Diagram information, refer to PCS-22, "Wiring Diagram".

1. CHECK FUSIBLE LINKS

Check that the following IPDM E/R fusible links are not blown.

Terminal No.	Signal name	Fusible link No.
1		A, D
2	Battery	С
22		I

Is the fusible link blown?

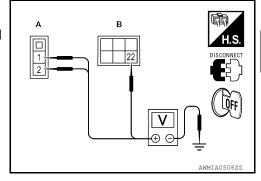
YES >> Replace the blown fusible link after repairing the affected circuit.

NO >> GO TO 2

2. CHECK BATTERY POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect IPDM E/R.
- 3. Check voltage between IPDM E/R harness connectors and ground.

Terminals			Ignition	V-11 0.0
(+)		(-)	switch posi-	Voltage (V) (Approx.)
Connector	Terminal	(-)	tion	(
E118 (A)	1		OFF	Battery voltage
	2	Ground		
E120 (B)	22			



Is there voltage on all pins?

YES >> GO TO 3

NO >> Repair or replace harness.

3. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.

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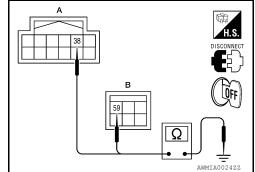
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POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

Check continuity between IPDM E/R harness connectors and ground.

IPDM E/R			Continuity
Connector	Terminal	Ground	Continuity
E122 (A)	38		Yes
E124 (B)	59		165



Does continuity exist?

YES >> Inspection End.

NO >> Repair or replace harness.

< DTC/CIRCUIT DIAGNOSIS >

HEADLAMP (HI) CIRCUIT

Description INFOID:0000000008790397

The IPDM E/R (intelligent power distribution module engine room) controls the headlamp high relay based on inputs from the BCM via the CAN communication lines. When the headlamp high relay is energized, power flows through fuses 34 and 35, located in the IPDM E/R. Power then flows to the front combination lamps to the headlamp high beam.

Component Function Check

INFOID:0000000008790398

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1. CHECK HEADLAMP (HI) OPERATION

®WITHOUT CONSULT

1. Start IPDM E/R auto active test. Refer to PCS-9, "Diagnosis Description".

2. Check that the headlamp switches to the high beam.

NOTE:

HI/LO is repeated 1 second each when using the IPDM E/R auto active test.

(P)WITH CONSULT

Select "EXTERNAL LAMPS" of IPDM E/R active test item.

2. With the test item operating, check that the headlamp switches to high beam.

HI: Headlamp switches to the high beam.

OFF : Headlamp OFF

Does the headlamp switch to high beam?

YES >> Headlamp (HI) circuit is normal.

NO >> Refer to EXL-37, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008790399

Regarding Wiring Diagram information, refer to <u>EXL-73</u>, "Wiring <u>Diagram"</u>(without DTRL) or <u>EXL-77</u>, "Wiring <u>Diagram"</u>(with DTRL).

1. CHECK HEADLAMP (HI) FUSES

USES

- 1. Turn the ignition switch OFF.
- Check that the following fuses are not open.

Unit	Location	Fuse No.	Capacity
Headlamp HI (LH)	IPDM E/R	35	10A
Headlamp HI (RH)	IPDM E/R	34	10A

Is the fuse open?

YES >> Replace the fuse after repairing the affected circuit.

NO >> GO TO 2

2.CHECK HEADLAMP (HI) OUTPUT VOLTAGE

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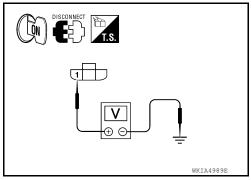
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< DTC/CIRCUIT DIAGNOSIS >

- 1. Turn the ignition switch OFF.
- 2. Disconnect the front combination lamp connector E7 (with DTRL), E11 (without DTRL) or E107.
- 3. Turn the ignition switch ON.
- 4. Turn the high beam headlamps ON.
- 5. With the high beam headlamps ON, check the voltage between the front combination lamp connector and ground.

	(+)		(-)	Voltage	
Connector		Terminal	(-)	voltage	
LH	E7 (with DTRL)				
LII	E11 (without DTRL)	1	Ground	Battery voltage	
RH	E107				



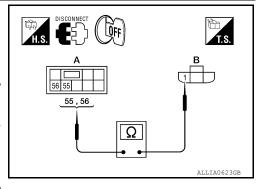
Is battery voltage present?

YES >> GO TO 4 NO >> GO TO 3

3.CHECK HEADLAMP (HI) CIRCUIT FOR OPEN

- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R connector E123.
- 3. Check continuity between the IPDM E/R harness connector (A) and the front headlamp harness connector (B).

	А		В		Continuity
Conr	nector	Terminal	Connector	Terminal	Continuity
LH		55	E7 (with DTRL)		
LII	E123	55	E11(without DTRL)	1	Yes
RH		56	E107		



Does continuity exist?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair the harnesses or connectors.

4.CHECK FRONT HEADLAMP (HI) GROUND CIRCUIT

Check continuity between the front headlamp harness connector terminal and ground.

Connector		Terminal	_	Continuity
LH	E7 (with DTRL)			
ЦΠ	E11 (without DTRL)	2	Ground	Yes
RH	E107			

DISCONNECT (OFF) 2 ALLIA0624GB

Does continuity exist?

YES >> Inspect the headlamp bulb.

NO (Except LH with DTRL)>> Repair the harness.

NO (LH with DTRL)>> GO TO 5.

5.CHECK CONTINUITY BETWEEN FRONT HEADLAMP LH (HI) AND DAYTIME LIGHT RELAY 1

- Disconnect daytime light relay 1 connector.
- Check continuity between front headlamp LH harness connector and daytime light relay 1 harness connector.

Front hea	idlamp LH	Daytime light relay 1		Continuity
Connector	Terminal	Connector Terminal		Continuity
E7	2	E103	3	Yes

< DTC/CIRCUIT DIAGNOSIS >

Does continuity exist?

YES >> GO TO 6.

NO >> Repair the harness or connector.

6. CHECK DAYTIME LIGHT RELAY 1 GROUND CIRCUIT

Check continuity between daytime light relay 1 harness connector and ground.

Daytime light relay 1			Continuity	
Connector	Terminal	Ground	Continuity	
E103	4		Yes	

Does continuity exist?

YES >> GO TO 7.

NO >> Repair the harness or connector.

7.CHECK DAYTIME LIGHT RELAY 1

Check daytime light relay 1. Refer to EXL-45, "Component Inspection"

Is the inspection result normal?

YES >> Inspect the headlamp bulb.

NO >> Replace daytime light relay 1.

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< DTC/CIRCUIT DIAGNOSIS >

HEADLAMP (LO) CIRCUIT

Description INFOID:000000008790400

The IPDM E/R (intelligent power distribution module engine room) controls the headlamp low relay based on inputs from the BCM via the CAN communication lines. When the headlamp low relay is energized, power flows through fuses 40 and 41, located in the IPDM E/R. Power then flows to the front combination lamps to the headlamp low beam.

Component Function Check

INFOID:0000000008790401

1. CHECK HEADLAMP (LO) OPERATION

NWITHOUT CONSULT

- 1. Start IPDM E/R auto active test. Refer to PCS-9, "Diagnosis Description".
- 2. Check that the headlamp is turned ON.

NOTE:

HI/LO is repeated 1 second each when using the IPDM E/R auto active test.

(P)WITH CONSULT

- Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 2. With the test items operating, check that the headlamp is turned ON.

LO : Headlamp ON OFF : Headlamp OFF

Is the headlamp turned ON?

YES >> Headlamp (LO) is normal.

NO >> Refer to EXL-40, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008790402

Regarding Wiring Diagram information, refer to <u>EXL-73</u>, "Wiring <u>Diagram"</u> (without DTRL) or <u>EXL-77</u>, "Wiring <u>Diagram"</u> (with DTRL).

1. CHECK HEADLAMP (LO) FUSES

- Turn the ignition switch OFF.
- Check that the following fuses are not open.

Unit	Location	Fuse No.	Capacity
Headlamp LO (LH)	IPDM E/R	40	15A
Headlamp LO (RH)	IPDM E/R	41	15A

Is the fuse open?

YES >> Replace the fuse after repairing the affected circuit.

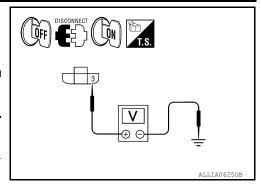
NO >> GO TO 2

2.CHECK HEADLAMP (LO) OUTPUT VOLTAGE

< DTC/CIRCUIT DIAGNOSIS >

- Turn the ignition switch OFF.
- 2. Disconnect the front headlamp connector.
- Turn the ignition switch ON.
- Turn the low beam headlamps ON.
- 5. With the low beam headlamps ON, check the voltage between the headlamp connector and ground.

(+) Connector Terminal		(-)	Voltage	
		Terminal	(-)	voltage
LH	E7 (with DTRL)			
LII	E11 (without DTRL)	3	Ground	Battery voltage
RH	E107			



Is battery voltage present?

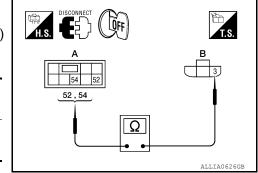
YES >> GO TO 8

NO (Except LH with DTRL)>>CHECK HEADLAMP (LO) CIRCUIT FOR OPEN GO TO 3 NO (LH with DTRL)>>CHECK HEADLAMP (LO) CIRCUIT FOR OPEN (LH WITH DTRL) GO TO 4

3.CHECK HEADLAMP (LO) CIRCUIT FOR OPEN (EXCEPT LH WITH DTRL)

- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R connector E123.
- Check continuity between the IPDM E/R harness connector (A) and the front headlamp harness connector (B).

<u>'</u>	Α		В		Continuity
Conr	nector	Terminal	Connector	Terminal	Continuity
LH	E123	52	E11	3	Yes
RH	L123	54	E107	3	165



Does continuity exist?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair the harnesses or connectors.

4.CHECK HEADLAMP (LO) CIRCUIT FOR OPEN (LH WITH DTRL)

- Turn the ignition switch OFF.
- Disconnect IPDM E/R connector E123 and daytime light relay 2 connector.
- Check continuity between the IPDM E/R harness connector and the daytime light relay 2 harness connec-

IPDM E/I	R	Daytime light relay 2		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E123	52	E104	5	Yes
E123	52	E 104	2	165

Does continuity exist?

YES >> GO TO 5

NO >> Repair the harnesses or connectors.

5. CHECK DAYTIME LIGHT RELAY 2 CIRCUIT (LH WITH DTRL)

Check continuity between the daytime light relay 2 harness connector and the front headlamp LH harness connector.

Daytime light i	elay 2	Front headlamp LH		Continuity
Connector	Terminal	Connector	Terminal	Continuity
E104	3	E7	3	Yes

Check continuity between the daytime light relay 2 harness connector and ground.

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< DTC/CIRCUIT DIAGNOSIS >

Daytime light relay 2			Continuity	
Connector	Terminal	Ground	Continuity	
E104	3		No	

Is the measurement value normal?

YES >> GO TO 6

NO >> Repair the harnesses or connectors.

$oldsymbol{6}$.CHECK DAYTIME LIGHT RELAY 2 GROUND CIRCUIT

Check continuity between daytime light relay 2 harness connector and ground.

Daytime li	ght relay 2		Continuity
Connector	Terminal	Ground	Continuity
E104	1		Yes

Does continuity exist?

YES >> GO TO 7.

NO >> Repair the harness or connector.

7.CHECK DAYTIME LIGHT RELAY $_{ m 2}$

Check daytime light relay 2. Refer to EXL-43, "Component Inspection".

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Replace daytime light relay 2.

8.CHECK FRONT HEADLAMP (LO) GROUND CIRCUIT

Check continuity between the front headlamp harness connector terminal 2 and ground.

	Connector	Terminal	_	Continuity
LH	E7 (with DTRL)			
	E11 (without DTRL)	2	Ground	Yes
RH	E107			

Does continuity exist?

>> Inspect the headlamp bulb.

NO (Except LH with DTRL)>> Repair the harness.

NO (LH with DTRL)>> GO TO 9

9.CHECK CONTINUITY BETWEEN FRONT HEADLAMP LH (HI) AND DAYTIME LIGHT RELAY 1

- Disconnect daytime light relay 1 connector.
- Check continuity between front headlamp LH harness connector and daytime light relay 1 harness connector.

Front hea	Front headlamp LH		Daytime light relay 1	
Connector	Terminal	Connector	r Terminal Cont	
E7	2	E103	3	Yes

Does continuity exist?

YES >> GO TO 10

NO >> Repair the harness or connector.

10.CHECK DAYTIME LIGHT RELAY 1 GROUND CIRCUIT

Check continuity between daytime light relay 1 harness connector and ground.

< DTC/CIRCUIT DIAGNOSIS >

Daytime light relay 1			Continuity
Connector	Terminal	Ground	Continuity
E103	4		Yes

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Does continuity exist?

YES >> GO TO 11

NO >> Repair the harness or connector.

11. CHECK DAYTIME LIGHT RELAY 1

Check daytime light relay 1. Refer to EXL-45, "Component Inspection"

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Replace daytime light relay 1.

Component Inspection

INFOID:0000000008790403

1. CHECK DAYTIME LIGHT RELAY 2

- 1. Turn ignition switch OFF.
- 2. Remove daytime light relay 2.
- 3. Check the continuity between daytime light relay 2 terminals under the following conditions.

Terminals	Condition	Continuity
3 and 5	12V direct current supply between terminals 1 and 2	Yes
3 and 3	No current supply	No

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace daytime light relay 2.

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DAYTIME LIGHT RELAY CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

DAYTIME LIGHT RELAY CIRCUIT

Description INFOID:000000008790404

The BCM sends a daytime light request to the IPDM E/R via the CAN communication lines. The power flows backward through fuse 45 located in IPDM E/R to daytime light relay 1 and LH high beam lamp to IPDM E/R, through the high beam fuses, through the RH high beam lamp and on to ground. The high beam lamps are wired in series which causes them to illuminate at a reduced intensity.

Diagnosis Procedure

INFOID:0000000008790405

Regarding Wiring Diagram information, refer to EXL-77, "Wiring Diagram".

1. CHECK DAYTIME LIGHT RELAY 1 FUSE

- 1. Turn the ignition switch OFF.
- 2. Check that the following fuse is not open.

Unit	Location	Fuse No.	Capacity
Daytime light relay 1	IPDM E/R	45	10A

Is the fuse open?

YES >> Replace the fuse after repairing the affected circuit.

NO >> GO TO 2

2.CHECK IPDM E/R OUTPUT SIGNAL

- 1. Turn the ignition switch OFF.
- Disconnect the daytime light relay 1 connector.
- Turn the ignition switch ON.
- 4. Check the voltage between the daytime light relay 1 harness connector and ground.

(+)	(-)	Voltage	
Connector	Terminal	(-) Voltage		
E103	2	Ground	Pattory voltage	
E103	5	Giouna	Battery voltage	

Is battery voltage present?

YES >> GO TO 3

NO >> GO TO 5

3.CHECK DAYTIME LIGHT RELAY 1 CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R connector E122.
- Check continuity between the IPDM E/R harness connector and the daytime light relay 1 harness connector.

IPDM E/R		Daytime light relay 1		Continuity
Connector	Terminal	Connector Terminal		Continuity
E122	44	E103	1	Yes

Check continuity between the daytime light relay 1 harness connector and ground.

Connector	Terminal	_	Continuity
E103	1	Ground	No

Is the measurement value normal?

DAYTIME LIGHT RELAY CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

YES >> GO TO 4

NO >> Repair the harnesses or connectors.

4.CHECK DAYTIME LIGHT RELAY 1

Check daytime light relay 1. Refer to EXL-45, "Component Inspection".

Is the inspection result normal?

YES >> Check headlamp (HI) circuit. If OK, replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R". If NG, refer to EXL-37, "Diagnosis Procedure".

NO >> Replace daytime light relay1.

5.CHECK DAYTIME LIGHT RELAY CIRCUIT FOR OPEN

- Turn the ignition switch OFF.
- Disconnect IPDM E/R connector E119. 2.
- Check continuity between the IPDM E/R harness connector and the daytime light relay 1 harness connector.

IPDM	1 E/R	Daytime light relay 1		Continuity		
Connector	Terminal	Connector				
E119	E110 10 E		10	E103	2	Yes
L119	10	L 103	5	165		

Does continuity exist?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair the harnesses or connectors.

Component Inspection

CHECK DAYTIME LIGHT RELAY 1

- Turn ignition switch OFF.
- 2. Remove daytime light relay 1.
- Check the continuity between daytime light relay 1 terminals under the following conditions.

Terminals	Condition	Continuity
3 and 5	12V direct current supply between terminals 1 and 2	Yes
3 and 3	No current supply	No
3 and 4	12V direct current supply between terminals 1 and 2	No
3 and 4	No current supply	Yes

Is the inspection result normal?

YES >> Inspection End.

NO >> Replace daytime light relay 1

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FRONT FOG LAMP CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

FRONT FOG LAMP CIRCUIT

Description INFOID:000000008790407

The IPDM E/R (intelligent power distribution module engine room) controls the front fog lamp relay based on inputs from the BCM via the CAN communication lines. When the front fog lamp relay is energized, power flows from the front fog lamp relay in the IPDM E/R to the front fog lamps.

Component Function Check

INFOID:0000000008790408

1. CHECK FRONT FOG LAMP OPERATION

NUMBER OF THE PROPERTY OF THE

- Activate IPDM E/R auto active test. Refer to <u>PCS-9</u>, "<u>Diagnosis Description</u>".
- 2. Check that the front fog lamp is turned ON.

(P)WITH CONSULT

- 1. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 2. With operating the test items, Check that the front fog lamp is turned ON.

FOG : Front fog lamp ON
OFF : Front fog lamp OFF

Is the front fog lamp turned ON?

YES >> Front fog lamp circuit is normal.

NO >> Refer to EXL-46, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008790409

Regarding Wiring Diagram information, refer to EXL-92, "Wiring Diagram".

1. CHECK FRONT FOG LAMP FUSE

- 1. Turn the ignition switch OFF.
- 2. Check that the following fuses are not open.

Unit	Location	Fuse No.	Capacity
Front fog lamp	IPDM E/R	56	20A

Is the fuse open?

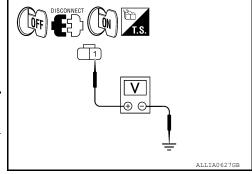
YES >> Replace the fuse after repairing the affected circuit.

NO >> GO TO 2

2.CHECK FRONT FOG LAMP OUTPUT VOLTAGE

- Turn the ignition switch OFF.
- Disconnect the front fog lamp connector.
- 3. Turn the ignition switch ON.
- 4. Turn the front fog lamps ON.
- 5. Check the voltage between the fog lamp connector and ground.

(+)			()	Voltage	
Co	nnector	Terminal (-)		voltage	
LH	E101	1	Ground	Rattery voltage	
RH	E102	1	Ground	Battery voltage	



Is battery voltage present?

YES >> GO TO 4 NO >> GO TO 3

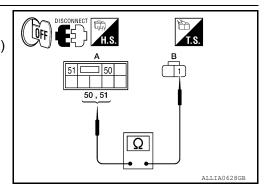
FRONT FOG LAMP CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

3.CHECK FRONT FOG LAMP OPEN CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R connector E123.
- 3. Check continuity between the IPDM E/R harness connector (A) and the front fog lamp harness connector (B).

	АВ			Continuity	
Conr	nector	Terminal	Connector Terminal		Continuity
LH	E123	50	E101	1	Yes
RH	L123	51	E102	1	162



Does continuity exist?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair the harnesses or connectors.

4. CHECK FRONT FOG LAMP GROUND CIRCUIT

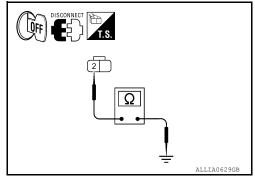
- 1. Disconnect the front fog lamp connector.
- 2. Check continuity between the front fog lamp harness connector terminal and ground.

Connector		Terminal	_	Continuity
LH	E101	2	Ground	Yes
RH	E102	2	Ground	165

Does continuity exist?

YES >> Inspect the fog lamp bulb.

NO >> Repair the harness.



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PARKING LAMP CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

PARKING LAMP CIRCUIT

Description INFOID:000000008790410

The IPDM E/R (intelligent power distribution module engine room) controls the tail lamp relay based on inputs from the BCM via the CAN communication lines. When the tail lamp relay is energized, power flows through fuse 36 and 37, located in the IPDM E/R. Power then flows to the front and rear combination lamps, license plate lamps.

Component Function Check

INFOID:0000000008790411

1. CHECK PARKING LAMP OPERATION

NWITHOUT CONSULT

- 1. Activate IPDM E/R auto active test. Refer to PCS-9, "Diagnosis Description".
- 2. Check that the parking lamp is turned ON.

WITH CONSULT

- 1. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 2. With operating the test items, check that the parking lamp is turned ON.

TAIL : Parking lamp ON
OFF : Parking lamp OFF

Is the parking lamp turned ON?

YES >> Parking lamp circuit is normal.

NO >> Refer to EXL-48, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000008790412

Regarding Wiring Diagram information, refer to EXL-102, "Wiring Diagram".

1. CHECK PARKING LAMP FUSES

- 1. Turn the ignition switch OFF.
- Check that the following fuses are not open.

Unit	Location	Fuse No.	Capacity
Parking lamps	IPDM E/R	36	10A
r arking lamps	IF DIVI L/IX	37	10A

Is the fuse open?

YES >> Replace the fuse after repairing the affected circuit.

NO >> GO TO 2

2.CHECK TAIL LAMP RELAY OUTPUT (VOLTAGE)

- Turn the ignition switch OFF.
- 2. Disconnect the front combination lamp connectors, front side marker lamp connectors, rear combination lamp connectors and license plate lamp connectors.
- Turn the ignition switch ON.
- 4. Turn the parking lamps ON.
- 5. With the parking lamps ON, check voltage between the front combination lamp connector and ground.

(+)			()	Voltage	
Connector		Terminal	(–)	voltage	
LH	E27	5	Ground	Battery voltage	
RH	E111	3	Oround	Dattery Voltage	

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< DTC/CIRCUIT DIAGNOSIS >

6. With the parking lamps ON, check voltage between the front side marker lamp connector and ground.

(+)			()	Voltage	
	Connector Termi		(-)	voltage	
LH	E17	7	Ground	Battery voltage	
RH	E108	,	Ground	ballery vollage	

7. With the parking lamps ON, check voltage between the rear combination lamp connector and ground.

(+)			()	Voltage	
(Connector	Terminal	(-)	vollage	
LH	C201	2	Ground	Rattery voltage	
RH	C202	3	Giouria	Battery voltage	

8. With the parking lamps ON, check voltage between the license plate lamp connector and ground

(+)			(-)	Voltage	
	Connector	Terminal	(-)	voltage	
LH	C203	1	Cround	Rattery voltage	
RH	C204	Į.	Ground	Battery voltage	

Are voltage readings as specified?

YES >> GO TO 4 NO >> GO TO 3

 $3. \mathrm{check}$ parking, license plate and tail Lamp circuit (open)

- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R connector E121, E123 and E124.
- 3. Check continuity between the IPDM E/R harness connector and the front combination lamp harness connector.

Co	onnector	Terminal	Connector	Terminal	Continuity
LH	E121	28	E27	- 5	Yes
RH	E123	49	E111		103

Check continuity between the IPDM E/R harness connector and the front side marker lamp harness connector.

Co	onnector	Terminal	Connector	Terminal	Continuity
LH	E121	28	E17	7	Yes
RH	E123	49	E108	,	163

5. Check continuity between the IPDM E/R harness connector and the rear combination lamp harness connector.

	IPDM E/F	₹	Rear combination lamp		Continuity
Co	onnector	Terminal	Connector Terminal		Continuity
LH	E124	57	C201	3	Yes
RH	E124 57	C202	3	165	

6. Check continuity between the IPDM E/R harness connector and license plate lamp connector.

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PARKING LAMP CIRCUIT

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	IPDM E/F	२	License plate lamp		Continuity
Co	onnector	Terminal	Connector Terminal		Continuity
LH	F124	57	C203	1	Yes
RH	L 124	37	C204	'	165

Are continuity results as specified?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair the harnesses or connectors.

4. CHECK PARKING, LICENSE AND TAIL LAMP GROUND CIRCUITS

1. Check continuity between the front combination lamp harness connector and ground.

Connector		Terminal	_	Continuity
LH	E27	4	Ground	Yes
RH	E111	7	Glound	165

2. Check continuity between the front side marker lamp harness connector and ground.

Connector		Terminal	_	Continuity
LH	E17	Q	Ground	Yes
RH	E108	O	Giodila	163

3. Check continuity between the rear combination lamp harness connector and ground.

Connector		Terminal	_	Continuity
LH	C201	2	Ground	Yes
RH	C202	2	Glound	163

4. Check continuity between the license plate lamp harness connector and ground.

Connector		Terminal	_	Continuity
LH	C203	2	Ground	Yes
RH	C204	2	Giodila	

Are continuity results as specified?

YES >> Inspect the parking lamp bulb.

NO >> Repair the harness.

TURN SIGNAL LAMP CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

TURN SIGNAL LAMP CIRCUIT

Description INFOID:000000008790413

The BCM monitors inputs from the combination switch (lighting and turn signal switch) to determine when to activate the turn signals. The BCM outputs voltage direction to the left and right turn signals during turn signal operation or both during hazard warning operation. The BCM sends a turn signal indicator request to the combination meter via the CAN communication lines.

The BCM performs the fast flasher operation (fail-safe) if any bulb or harness of the turn signal lamp circuit is open.

NOTE:

Turn signal lamp blinks at normal speed when using the hazard warning lamp.

Component Function Check

1.CHECK TURN SIGNAL LAMP

(P)WITH CONSULT

- 1. Select "FLASHER" of BCM (FLASHER) active test item.
- 2. With operating the test items, check that the turn signal lamp blinks.

LH: Turn signal lamp LH blinkingRH: Turn signal lamp RH blinkingOFF: The turn signal lamp OFF

Does the turn signal lamp blink?

YES >> Turn signal lamp circuit is normal.

NO >> Refer to EXL-51, "Diagnosis Procedure".

Diagnosis Procedure

Regarding Wiring Diagram information, refer to EXL-96, "Wiring Diagram".

1. CHECK TURN SIGNAL LAMP BULB

Check the applicable lamp bulb to be sure the proper bulb standard is in use and the bulb is not open.

Is the bulb OK?

YES >> GO TO 2

NO >> Replace the bulb.

2.CHECK TURN SIGNAL LAMP OUTPUT VOLTAGE

- Turn the ignition switch OFF.
- 2. Disconnect the front combination lamp connector and the rear combination lamp connector.
- Turn the ignition switch ON.
- 4. With turn signal switch operating, check the voltage between the front combination lamp harness connector and ground.

(+)		(-)	Voltage	
Con	Connector		()	rollage
E27	LH			
E111	RH	6	Ground	(V) 15 10 5 0 1 s

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TURN SIGNAL LAMP CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

5. With turn signal switch operating, check the voltage between the rear combination lamp harness connector and ground.

(+)		(-)	Voltage	
Con	nector	Terminal	()	Voltage
C207	LH			
C208	RH	4	Ground	(V) 15 10 5 0 1 s PKID0926E

Is voltage reading as specified?

YES >> GO TO 5 NO >> GO TO 3

3.check turn signal lamp circuit for open

- 1. Turn the ignition switch OFF.
- 2. Disconnect BCM connector M20.
- Check continuity between the BCM harness connector and the front combination lamps harness connector.

всм		Front comb	ination lamp	Continuity		
Con	nector	Terminal	Connector Terminal		Continuity	
Front LH	M20	60	E27	6	Yes	
Front RH	IVIZU	61	E111	O	165	

4. Check continuity between the BCM harness connector and the rear combination lamp harness connector.

всм		Rear combi	nation lamp	Continuity	
Con	nector	Terminal	Connector	Terminal	Continuity
Rear LH	M20	60	C207	4	Yes
Rear RH	IVIZU	61	C208	4	165

Are continuity results as specified?

YES >> GO TO 4

NO >> Repair the harnesses or connectors.

4. CHECK TURN SIGNAL LAMP SHORT CIRCUIT

Check continuity between the BCM harness connector and ground.

С	onnector	Terminal	_	Continuity
LH	M20	60	Ground	No
RH		61		

Does continuity exist?

YES >> Repair the harnesses or connectors.
NO >> Replace BCM, Refer to BCS-49. "Re

>> Replace BCM. Refer to <u>BCS-49</u>, "Removal and Installation".

DISCONNECT OFF

5.CHECK TURN SIGNAL LAMP GROUND CIRCUIT

1. Check continuity between the front combination lamp harness connector and ground.

TURN SIGNAL LAMP CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

Connector		Terminal	_	Continuity
Front LH	E27	4	Ground	Yes
Front RH	E111	4	Ground	

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2. Check continuity between the rear combination lamp harness connector and ground.

Connector		Terminal	_	Continuity
Rear LH	C207	5	Ground	Yes
Rear RH	C208	3	Ground	163

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Are continuity results as specified?

YES >> Replace the malfunctioning lamp.

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NO >> Repair the harnesses or connectors.

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OPTICAL SENSOR

< DTC/CIRCUIT DIAGNOSIS >

OPTICAL SENSOR

Description INFOID:0000000008790416

The optical sensor converts the outside brightness (lux) to voltage and transmits the optical sensor signal to the BCM.

Diagnosis Procedure

INFOID:0000000008790417

Regarding Wiring Diagram information, refer to EXL-85, "Wiring Diagram".

1. CHECK OPTICAL SENSOR GROUND CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect BCM connector M18 and optical sensor connector M145.
- 3. Check continuity between BCM harness connector and optical sensor harness connector.

В	CM Or		l sensor	Continuity
Connector	Terminal	Connector	Terminal	Continuity
M18	18	M14	3	Yes

4. Check continuity between BCM harness connector and ground.

В	CM	_	Continuity
Connector	Terminal		Continuity
M18	18	Ground	No

Are continuity results as specified?

YES >> GO TO 2

NO >> Repair harness or connector.

2.CHECK OPTICAL SENSOR SIGNAL CIRCUIT

1. Check continuity between BCM harness connector and optical sensor harness connector.

В	CM	Optica	Continuity	
Connector	Terminal	Connector Terminal		Continuity
M20	58	M14	4	Yes

2. Check continuity between BCM harness connector and ground.

В	CM		Continuity
Connector	Terminal		Continuity
M20	58	Ground	No

Are the continuity results as specified?

YES >> Replace the optical sensor. Refer to EXL-149, "Removal and Installation".

NO >> Repair harness or connector.

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< ECU DIAGNOSIS INFORMATION >

ECU DIAGNOSIS INFORMATION

BCM (BODY CONTROL MODULE)

Reference Value

NOTE:

The Signal Tech II Tool (J-50190) can be used to perform the following functions. Refer to the Signal Tech II User Guide for additional information.

- Activate and display TPMS transmitter IDs
- Display tire pressure reported by the TPMS transmitter
- Read TPMS DTCs
- Register TPMS transmitter IDs
- Test remote keyless entry keyfob relative signal strength

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition	Value/Status
ACC ON SW	Ignition switch OFF or ON	Off
ACC ON SW	Ignition switch ACC	On
AID COND CW	A/C switch OFF	Off
AIR COND SW	A/C switch ON	On
AIR PRESS FL	Front left tire air pressure value	kPa, kg/cm ² , psi
AIR PRESS FR	Front right tire air pressure value	kPa, kg/cm ² , psi
AIR PRESS RL	Rear left tire air pressure value	kPa, kg/cm ² , psi
AIR PRESS RR	Rear right tire air pressure value	kPa, kg/cm², psi
DDAKE CW	Brake pedal released	Off
BRAKE SW	Brake pedal applied	On
DUCKLE CW	Seat belt buckle unfastened	Off
BUCKLE SW	Seat belt buckle fastened	On
DUZZED	Buzzer in combination meter OFF	Off
BUZZER	Buzzer in combination meter ON	On
CADCO LAMB CW	Cargo lamp switch OFF	Off
CARGO LAMP SW	Cargo lamp switch ON	On
CDL LOCK OW	Door lock/unlock switch does not operate	Off
CDL LOCK SW	Press door lock/unlock switch to the LOCK side	On
	Door lock/unlock switch does not operate	Off
CDL UNLOCK SW	Press door lock/unlock switch to the UNLOCK side	On
DOOD CW AC	Front door RH closed	Off
DOOR SW-AS	Front door RH opened	On
DOOD CW DD	Front door LH closed	Off
DOOR SW-DR	Front door LH opened	On
DOOD SW DI	Rear door LH closed	Off
DOOR SW-RL	Rear door LH opened	On
DOOD CW DD	Rear door RH closed	Off
DOOR SW-RR	Rear door RH opened	On
FAN ON CIO	Blower motor fan switch OFF	Off
FAN ON SIG	Blower motor fan switch ON	On

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Monitor Item	Condition	Value/Status
FR FOG SW	Front fog lamp switch OFF	Off
11(1000)	Front fog lamp switch ON	On
FR WASHER SW	Front washer switch OFF	Off
TIT WASHER OW	Front washer switch ON	On
FR WIPER LOW	Front wiper switch OFF	Off
TR WIFER LOW	Front wiper switch LO	On
FR WIPER HI	Front wiper switch OFF	Off
TIX WIF LIXTII	Front wiper switch HI	On
FR WIPER INT	Front wiper switch OFF	Off
FR WIFER IN	Front wiper switch INT	On
ED WIDED STOD	Any position other than front wiper stop position	Off
FR WIPER STOP	Front wiper stop position	On
LIAZADD CW	When hazard switch is not pressed	Off
HAZARD SW	When hazard switch is pressed	On
LIEAD LAMD CVA/A	Headlamp switch OFF	Off
HEAD LAMP SW 1	Headlamp switch 1st	On
LIEAD LAMB CM/2	Headlamp switch OFF	Off
HEAD LAMP SW 2	Headlamp switch 1st	On
LUBEAN OW	High beam switch OFF	Off
HI BEAM SW	High beam switch HI	On
ID DECOT EL 4	ID registration of front left tire incomplete	YET
ID REGST FL1	ID registration of front left tire complete	DONE
ID DECCT ED4	ID registration of front right tire incomplete	YET
ID REGST FR1	ID registration of front right tire complete	DONE
ID DECCT DI 4	ID registration of rear left tire incomplete	YET
ID REGST RL1	ID registration of rear left tire complete	DONE
ID DECCT DD4	ID registration of rear right tire incomplete	YET
ID REGST RR1	ID registration of rear right tire complete	DONE
JONEON OW	Ignition switch OFF or ACC	Off
IGN ON SW	Ignition switch ON	On
IONI CIA/ CANI	Ignition switch OFF or ACC	Off
IGN SW CAN	Ignition switch ON	On
INT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	1 - 7
1/E// 0// 1 / 0/M	Door key cylinder LOCK position	Off
KEY CYL LK-SW	Door key cylinder other than LOCK position	On
1/E// 0// 1/N 0/M	Door key cylinder UNLOCK position	Off
KEY CYL UN-SW	Door key cylinder other than UNLOCK position	On
KEV ON OW	Mechanical key is removed from key cylinder	Off
KEY ON SW	Mechanical key is inserted to key cylinder	On
WEW E00 : 00''	LOCK button of key fob is not pressed	Off
KEYLESS LOCK	LOCK button of key fob is pressed	On
	PANIC button of key fob is not pressed	Off
KEYLESS PANIC	PANIC button of key fob is pressed	On

< ECU DIAGNOSIS INFORMATION >

Monitor Item	Condition	Value/Status
VEVI FOO LINII OOK	UNLOCK button of key fob is not pressed	Off
KEYLESS UNLOCK	UNLOCK button of key fob is pressed	On
LIGHT SW 1ST	Lighting switch OFF	Off
LIGHT SW 151	Lighting switch 1st	On
OIL PRESS SW	Ignition switch OFF or ACC Engine running	Off
	Ignition switch ON	On
PASSING SW	Other than lighting switch PASS	Off
PASSING SW	Lighting switch PASS	On
REAR DEF SW	Rear window defogger switch OFF	Off
REAR DEF 5W	Rear window defogger switch ON	On
TURN SIGNAL L	Turn signal switch OFF	Off
TURN SIGNAL L	Turn signal switch LH	On
TURN SIGNAL R	Turn signal switch OFF	Off
TURN SIGNAL R	Turn signal switch RH	On
VEHICLE SPEED	While driving	Equivalent to speedometer reading
WARNING LAMP	Low tire pressure warning lamp in combination meter OFF	Off
WARNING LAWP	Low tire pressure warning lamp in combination meter ON	On

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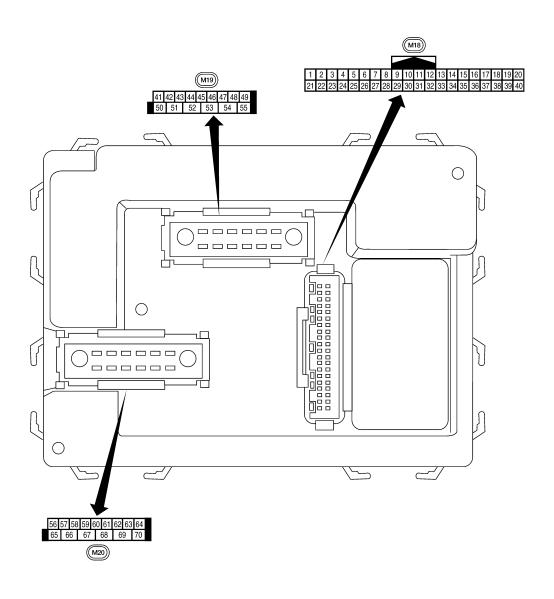
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Terminal Layout



LIIA2443E

Physical Values

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	Wire		Signal		Measuring condition	Reference value or waveform
Terminal	color	Item	input/ output	Ignition switch	Operation or condition	(Approx.)
1	BR	Ignition keyhole illumi-	Output	OFF	Door is locked (SW OFF)	Battery voltage
!	DIX	nation	Output	OFF	Door is unlocked (SW ON)	0V
2	Р	Combination switch input 5	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 4 2 0 **5ms SKIA5291E
3	SB	Combination switch input 4	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 6 4 2 0 + 5ms SKIA5292E
4	V	Combination switch input 3	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 6 4 2 0 **5ms SKIA5291E
5	L R	Combination switch input 2 Combination switch input 1	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 6 4 2 0 **5ms
		Front door lock as-			ON (open, 2nd turn)	Momentary 1.5V
7	GR	sembly LH (key cylin- der switch) unlock	Input	_	OFF (closed)	0V
		Front door lock as-		OFF	On (open)	Momentary 1.5V
8	SB	sembly LH (key cylin- der switch) lock	Input		OFF (closed)	0V
		,		0==	OFF (brake pedal is not depressed)	0V
9	LG	Brake sw	Input	OFF	ON (brake pedal is depressed)	Battery voltage
11	G/B	Ignition switch (ACC or ON)	Input	ACC or ON	Ignition switch ACC or ON	Battery voltage
		Front door switch RH (All)			ON (open)	0V
12	LG	Rear door switch up- per RH (King Cab) Rear door switch low- er RH (King Cab)	Input	OFF	OFF (closed)	Battery voltage

< ECU D	BCM (BODY CONTROL MODULE) ECU DIAGNOSIS INFORMATION >													
			Signal		Measuring condition									
Terminal	Wire color	Item	input/ output	Ignition switch	Operation or condition	Reference value or waveform (Approx.)								
13	L	Rear door switch RH (Crew Cab)	Input	OFF	ON (open) OFF (closed)	0V Battery voltage								
15	W	Tire pressure warning check connector	Input	OFF	_	5V								
18	BR	Remote keyless entry receiver (Ground)	Output	OFF	_	0V								
19	V	Remote keyless entry receiver (power supply)	Output	OFF	Ignition switch OFF	(V) 6 4 2 0 								
20	G	Remote keyless entry receiver signal (Sig-	lnout	OFF	Stand-by (keyfob buttons released)	(V) 6 4 2 0 ••50 ms								
20	G	nal)	Input OFF	mpat	три			mpat	par	pat			When remote keyless entry receiver receives signal from keyfob (keyfob buttons pressed)	(V) 6 4 2 1
21	GR	NATS antenna amp.	Input	OFF → ON	Ignition switch (OFF → ON)	Just after turning ignition switch ON: Pointer of tester should move.								
23	G	Security indicator lamp	Output	OFF	Goes OFF → illuminates (Every 2.4 seconds)	Battery voltage → 0V								
25	BR	NATS antenna amp.	Input	OFF → ON	Ignition switch (OFF → ON)	Just after turning ignition switch ON: Pointer of tester should move.								
27	W	Compressor ON sig-	Input	ON	A/C switch OFF	5V								
۷.	V V	nal	iriput	ON	A/C switch ON	0V								
28	R	Front blower monitor	Input	ON	Front blower motor OFF	Battery voltage								
	- •				Front blower motor ON	0V								
29	G	Hazard switch	Input	OFF	ON	0V								
			-		OFF	5V								
31	GR	Cargo lamp switch	Input	OFF	ON	0V								
					OFF	Battery voltage								

-	Wire		Signal		Measuring condition	Reference value or waveform
Terminal	color	Item	input/ output	Ignition switch	Operation or condition	(Approx.)
32	0	Combination switch output 5	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 6 4 2 0 + 5ms SKIA5291E
33	GR	Combination switch output 4	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 6 4 2 0 ***5ms
34	G	Combination switch output 3	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 6 4 2 0 +5ms
35	BR	Combination switch output 2				SKIA5291E
36	LG	Combination switch output 1	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	**************************************
					Key inserted	Battery voltage
37	В	Key switch	Input	OFF	Key removed	0V
38	W/R	Ignition switch (ON)	Input	ON	_	Battery voltage
39	L	CAN-H	_	_	_	_
40	Р	CAN-L	_	_	Rear window defogger switch ON	
41	Υ	Rear window defogger switch	Input	ON	Rear window defogger switch OFF	5V
45	V	Lock switch	Input	OFF	ON (lock) OFF	0V Battery voltage
46	LG	Unlock switch	Input	OFF	ON (unlock) OFF	0V Battery voltage
		Front door switch LH (All)			ON (open)	0V
47	GR	Rear door switch up- per LH (King Cab) Rear door switch low- er LH (King Cab)	Input	OFF	OFF (closed)	Battery voltage

	Wire		Signal		Measuring con	dition	Reference value or waveform
Terminal	color	Item	input/ output	Ignition switch	Operation	or condition	(Approx.)
48	Р	Rear door switch LH	Input	OFF	ON (open)		0V
10		(Crew Cab)	прис	011	OFF (closed)		Battery voltage
50	Р	Cargo lamp	Output	OFF	Any door oper		0V
00		ourgo lamp	Cutput	011	All doors close	ed (OFF)	Battery voltage
51	Ο	Trailer turn signal (right)	Output	ON	Turn right ON		(V) 15 10 50 500 ms SKIA3009J
52	LG	Trailer turn signal (left)	Output	ON	Turn left ON		(V) 15 10 500 ms SKIA3009J
56	R/Y Battery saver output		Output	OFF	15 minutes after ignition switch is turned OFF		0V
		ON —		_	Battery voltage		
57	R/Y	Battery power supply	Input	_	_		Battery voltage
58	W	Optical sensor	Input	Input ON	When optical sensor is illuminated		3.1V or more
		option concer	трас		When optical s minated	sensor is not illu-	0.6V or less
59	GR	Front door lock as-	Output	OFF	OFF (neutral)		0V
00	<u> </u>	sembly LH (unlock)	Catput	0	ON (unlock)		Battery voltage
60	LG	Turn signal (left)	Output	ON	Turn left ON		(V) 15 10 5 0 500 ms
61	G	Turn signal (right)	Output	ON	Turn right ON		(V) 15 10 500 ms SKIA3009J
62	חם	Interior room/map	Output	OEE	Any door	ON (open)	0V
63	BR	lamp	Output	OFF	switch	OFF (closed)	Battery voltage
65	\/	All door lock actuators	Output	OFF	OFF (neutral)		0V
00	65 V	(lock)	Output	OFF	ON (lock)		Battery voltage

< ECU DIAGNOSIS INFORMATION >

	Wire		Signal		Measuring condition	Reference value or waveform						
Terminal	color	Item	input/ Ignition output switch		Operation or condition	(Approx.)						
		Front door lock actua-			OFF (neutral)	0V						
66	L	tor RH, rear door lock actuators LH/RH (un- lock)	Output	OFF	ON (unlock)	Battery voltage						
67	В	Ground	Input	ON	_	0V						
		Power window power supply (RAP)			Ignition switch ON	Battery voltage						
						_	Within 45 seconds after ignition switch OFF	Battery voltage				
68 ¹	601 ()		Output —	_	_		_	_	_	_	Output —	_
												When front door LH or RH is open or power window timer operates
					Ignition switch ON	Battery voltage						
					Within 45 seconds after ignition switch OFF	Battery voltage						
68 ²	SB	Power window power supply (RAP)	Output	_	More than 45 seconds after ignition switch OFF	0V						
			When front door LH or RH is open or power window timer operates	0V								
69	Р	Power window power supply (BAT)	Output	OFF	_	Battery voltage						
70	W	Battery power supply	Input	OFF	_	Battery voltage						

^{1:} King cab (with power door lock system)

Fail Safe

Fail-safe index

BCM performs fail-safe control when any DTC listed below is detected.

Display contents of CONSULT	Fail-safe	Cancellation
U1000: CAN COMM CIRCUIT	Inhibit engine cranking	When the BCM re-establishes communication with the other modules.

DTC Inspection Priority Chart

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	DTC	'
1	U1000: CAN COMM CIRCUIT	(
2	B2190: NATS ANTENNA AMP B2191: DIFFERENCE OF KEY B2192: ID DISCORD BCM-ECM B2193: CHAIN OF BCM-ECM	F

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^{2:} Crew cab (without power door lock system)

< ECU DIAGNOSIS INFORMATION >

Priority	DTC
3	C1729: VHCL SPEED SIG ERR C1735: IGNITION SIGNAL
4	C1704: LOW PRESSURE FL C1705: LOW PRESSURE FR C1706: LOW PRESSURE RR C1707: LOW PRESSURE RL C1708: [NO DATA] FL C1709: [NO DATA] FL C1709: [NO DATA] FR C1710: [NO DATA] FR C1711: [NO DATA] RR C1711: [NO DATA] RL C1712: [CHECKSUM ERR] FL C1713: [CHECKSUM ERR] FR C1714: [CHECKSUM ERR] RR C1715: [CHECKSUM ERR] RR C1716: [PRESSDATA ERR] FR C1717: [PRESSDATA ERR] FR C1718: [PRESSDATA ERR] RR C1719: [PRESSDATA ERR] RR C1719: [PRESSDATA ERR] RR C17120: [CODE ERR] FR C1721: [CODE ERR] FR C1722: [CODE ERR] RR C1723: [CODE ERR] RR C1724: [BATT VOLT LOW] FR C1725: [BATT VOLT LOW] RR C1726: [BATT VOLT LOW] RR C1727: [BATT VOLT LOW] RR C17277: [BATT VOLT LOW] RR C1727: [BATT VOLT LOW] RR

DTC Index

NOTE:

Details of time display

- CRNT: Displays when there is a malfunction now or after returning to the normal condition until turning ignition switch OFF → ON again.
- 1 39: Displayed if any previous malfunction is present when current condition is normal. It increases like 1
 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. The counter
 remains at 39 even if the number of cycles exceeds it. It is counted from 1 again when turning ignition switch
 OFF → ON after returning to the normal condition if the malfunction is detected again.

CONSULT display	Fail-safe	Low tire pressure warning lamp ON	Reference page
No DTC is detected. further testing may be required.	_	_	_
U1000: CAN COMM CIRCUIT	_	_	BCS-26
B2190: NATS ANTTENA AMP	_	_	<u>SEC-18</u>
B2191: DIFFERENCE OF KEY	_	_	<u>SEC-21</u>
B2192: ID DISCORD BCM-ECM	_	_	<u>SEC-22</u>
B2193: CHAIN OF BCM-ECM	_	_	<u>SEC-24</u>
C1708: [NO DATA] FL	_	Х	<u>WT-15</u>
C1709: [NO DATA] FR	_	Х	<u>WT-15</u>
C1710: [NO DATA] RR	_	Х	<u>WT-15</u>
C1711: [NO DATA] RL	_	Х	<u>WT-15</u>
C1712: [CHECKSUM ERR] FL	_	Х	<u>WT-17</u>
C1713: [CHECKSUM ERR] FR	_	Х	<u>WT-17</u>
C1714: [CHECKSUM ERR] RR	_	X	<u>WT-17</u>
C1715: [CHECKSUM ERR] RL	_	Х	<u>WT-17</u>

< ECU DIAGNOSIS INFORMATION >

CONSULT display	Fail-safe	Low tire pressure warning lamp ON	Reference page
C1716: [PRESSDATA ERR] FL	_	Х	<u>WT-19</u>
C1717: [PRESSDATA ERR] FR	_	X	<u>WT-19</u>
C1718: [PRESSDATA ERR] RR	_	Х	<u>WT-19</u>
C1719: [PRESSDATA ERR] RL	_	X	<u>WT-19</u>
C1720: [CODE ERR] FL	_	X	<u>WT-17</u>
C1721: [CODE ERR] FR	_	X	<u>WT-17</u>
C1722: [CODE ERR] RR	_	X	<u>WT-17</u>
C1723: [CODE ERR] RL	_	X	<u>WT-17</u>
C1724: [BATT VOLT LOW] FL	_	X	<u>WT-17</u>
C1725: [BATT VOLT LOW] FR	_	Х	<u>WT-17</u>
C1726: [BATT VOLT LOW] RR	_	Х	<u>WT-17</u>
C1727: [BATT VOLT LOW] RL	_	Х	<u>WT-17</u>
C1729: VHCL SPEED SIG ERR	_	X	<u>WT-21</u>
C1735: IGNITION SIGNAL	_	Х	<u>WT-22</u>

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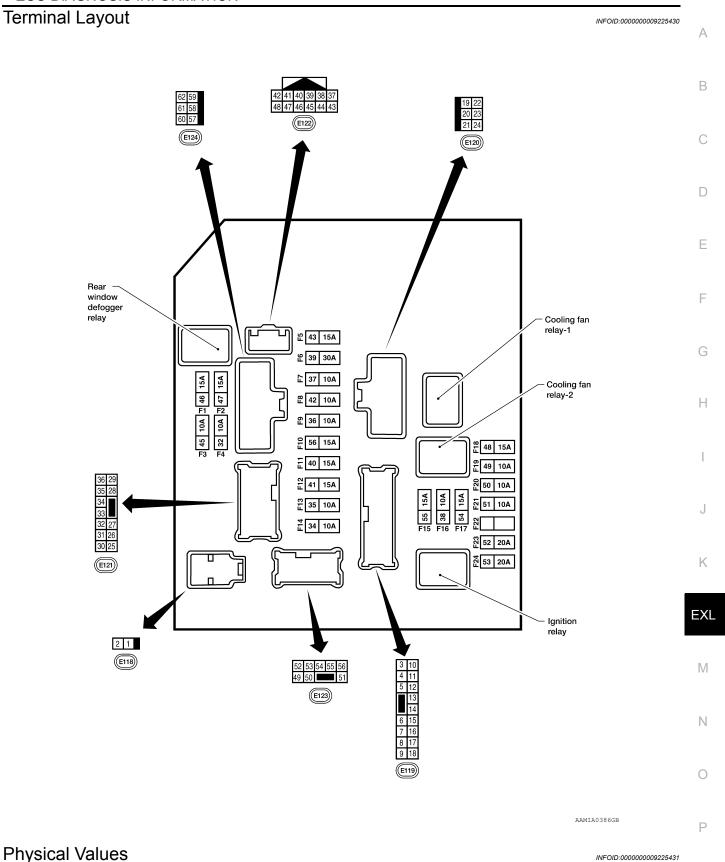
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

Reference Value

VALUES ON THE DIAGNOSIS TOOL

Monitor Item		Condition	Value/Status			
MOTOR FAN REQ	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	1, 2, 3, 4			
A IO OOMB DEO	A/C switch OFF					
A/C COMP REQ	A/C switch ON		On			
TAIL & CL D. DEC	Lighting switch OFF		Off			
TAIL&CLR REQ	Lighting switch 1ST, 2ND, HI	or AUTO (Light is illuminated)	On			
HL LO REQ	Lighting switch OFF		Off			
HL LO REQ	Lighting switch 2ND HI or AU	O (Light is illuminated)	On			
HL HI REQ	Lighting switch OFF		Off			
HL HI KEQ	Lighting switch HI		On			
FR FOG REQ	Lighting switch 2ND	Front fog lamp switch OFF	Off			
IN FUU KEU	LIGHTHING SWITCH ZIND	Front fog lamp switch ON	On			
		Front wiper switch OFF	Stop			
FR WIP REQ	Ignition switch ON	Front wiper switch INT	1LOW			
FR WIF REQ		Front wiper switch LO	Low			
		Front wiper switch HI	HI			
	Ignition switch ON	Front wiper stop position	STOP P			
WIP AUTO STOP		Any position other than front wiper stop position	ACT P			
		Front wiper operates normally	Off			
WIP PROT	Ignition switch ON	Ignition switch ON Front wiper stops at fail-safe operation				
ST RLY REQ	Ignition switch OFF or ACC		Off			
ST KET KEQ	Ignition switch START		On			
IGN RLY	Ignition switch OFF or ACC		Off			
IGN ICL	Ignition switch ON	Ignition switch ON				
RR DEF REQ	Rear defogger switch OFF		Off			
IN DEL NEQ	Rear defogger switch ON	On				
OIL P SW	Ignition switch OFF, ACC or en	Open				
OIL F 3W	Ignition switch ON		Close			
DTRL REQ	Daytime light system requeste	Off				
DIKL KEQ	Daytime light system requeste	On				
	Not operated	Off				
THFT HRN REQ	 Panic alarm is activated Horn is activated with VEHIOTEM 	On				
HODN CHIDD	Not operated		Off			
HORN CHIRP	Door locking with keyfob (horr	chirp mode)	On			

< ECU DIAGNOSIS INFORMATION >



Physical Values

PHYSICAL VALUES

			Signal	Measuring condition Signal			
Terminal	Wire color	Signal name	input/ output	Igni- tion switch	Operation or condition	Reference value (Approx.)	
1	W	Battery power supply	Input	OFF	_	Battery voltage	
2	R	Battery power supply	Input	OFF	_	Battery voltage	
3	G	ECM relay	Output		Ignition switch ON or START	Battery voltage	
3	G	ECIVITEIAY	Output		Ignition switch OFF or ACC	0V	
4	P ¹	ECM relay	Output		Ignition switch ON or START	Battery voltage	
7	R^2	Low relay	Output		Ignition switch OFF or ACC	0V	
6	V	Throttle control motor	Output		Ignition switch ON or START	Battery voltage	
0	V	relay	Output	_	Ignition switch OFF or ACC	0V	
7	BR	ECM relay control	Input		Ignition switch ON or START	0V	
,	טוע	Low relay control	Input		Ignition switch OFF or ACC	Battery voltage	
8	W/R	Fuse 54	Output	_	Ignition switch ON or START	Battery voltage	
O	VV/F	1 use 54	Output		Ignition switch OFF or ACC	0V	
10	R/B	Fuse 45	Output	ON	Daytime light system active	0V	
10	R/B	ruse 45	Output	ON	Daytime light system inactive	Battery voltage	
11	Y	A/C compressor	Output	ON or	A/C switch ON or defrost A/C switch	Battery voltage	
11	1	A/C compressor		START	A/C switch OFF or defrost A/C switch	0V	
12	W/G	Ignition switch sup-	Input	1 1		OFF or ACC	0V
12	W/G	plied power		_	ON or START	Battery voltage	
13	R	Fuel pump relay	Output		Ignition switch ON or START	Battery voltage	
13	K	Fuel pullip relay	Output		Ignition switch OFF or ACC	0V	
14	W/G	Fuse 49	Outnut		Ignition switch ON or START	Battery voltage	
14	W/G	ruse 49	Output		Ignition switch OFF or ACC	0V	
15	W/D	Fire FO (ADC)	Outnut		Ignition switch ON or START	Battery voltage	
15	W/R	Fuse 50 (ABS)	Output	_	Ignition switch OFF or ACC	0V	
16	\A//O	F::00 F1	044		Ignition switch ON or START	Battery voltage	
16	W/G	Fuse 51	Output	_	Ignition switch OFF or ACC	0V	
47	14//0	F	0.1.1		Ignition switch ON or START	Battery voltage	
17	W/G	Fuse 55	Output	_	Ignition switch OFF or ACC	0V	
19	W	Starter motor	Output	START	_	Battery voltage	
20	BR	Cooling fan motor (low)	Output	ON or START	_	Battery voltage	
6.1	05	Ignition switch sup-			OFF or ACC	0V	
21	GR	plied power	Input	_	START	Battery voltage	
22	G	Battery power supply	Output	OFF	_	Battery voltage	
23	LG	Door mirror defogger	Output	_	When rear defogger switch is ON	Battery voltage	
		output signal	-		When raker defogger switch is OFF	0V	

			Signal		Measuring condition Ignition Operation or condition switch			
Terminal	Wire color	Signal name	input/ Igni- output tion	tion			Reference value (Approx.)	
24	В	Cooling fan motor			Conditions cor fan operation	rect for cooling	Battery voltage	
24	Р	(high)	Output	_	Conditions not cooling fan op		0V	
27	W/G	Fuse 38	Output		Ignition switch	ON or START	Battery voltage	
21	VV/O	1 436 30	Output		Ignition switch	OFF or ACC	0V	
28	R	LH front parking and	Output	OFF	Lighting switch 1st po-	OFF	0V	
20	IX	front side marker lamp	Output	OH	sition	ON	Battery voltage	
					Lighting	OFF	0V	
29	G	Trailer tow relay	Output	ON	switch 1st po- sition	ON	Battery voltage	
0.5		F 50			Ignition switch	ON or START	Battery voltage	
30	R/B	Fuse 53	Output	_	Ignition switch		0V	
32	GR	Wiper low speed sig-	Output	ON or	Wiper switch	OFF	Battery voltage	
32	GK	nal	Output	START	wiper switch	LO or INT	0V	
35	L	Wiper high speed sig-	Output	ON or	Wiper switch	OFF, LO, INT	Battery voltage	
		nal		START		HI	0V	
					Ignition switch	ON	(V) 6 4 2 0 2ms JPMIA0001GB	
37	Y	Power generation command signal	Output —		40% is set on "ALTERNATOI" "ENGINE"		(V) 6 4 2 0 2ms JPMIA0002GB 3.8 V	
						40% is set on "Active test," "ALTERNATOR DUTY" of "ENGINE"		(V) 6 4 2 0 ***2ms*********************************
38	В	Ground	Input	_	_		0V	
39	L	CAN-H	_	ON	_		_	
40	Р	CAN-L	_	ON	-	_	_	
42	GR	Oil pressure switch	Input	_	Engine running	9	Battery voltage	
	511	Sil procedio owitori	put		Engine stopped		0V	

			Signal		Measuring con			
Terminal	Wire color	Signal name	input/ output	Igni- tion switch	Operation or condition		Reference value (Approx.)	
43	G	Wiper auto stop signal	Input	ON or START	Wiper switch	OFF, LO, INT	Battery voltage	
44	R	Daytime light relay	Input	ON	Daytime light s	system active	0V	
44	K	control (Canada only)	Input	ON	Daytime light s	system inactive	Battery voltage	
45	LG	Horn relay control	Input	ON	When door lock using keyfob (ks are operated OFF \rightarrow ON) ³	Battery voltage → 0V	
40		Fuel pump relay con-	lanat		Ignition switch	ON or START	0V	
46	V	trol	Input	_	Ignition switch	OFF or ACC	Battery voltage	
47	0	Throttle control motor	lanat		Ignition switch	ON or START	0V	
47	0	relay control	Input	_	Ignition switch	OFF or ACC	Battery voltage	
		Ota da carla (Cabibil		ONL	Selector lever	in "P" or "N"	0V	
48	R	Starter relay (inhibit switch)	Input	ON or START	Selector lever tion	any other posi-	Battery voltage	
_		Front RH parking and	_		Lighting	OFF	0V	
49	GR	front side marker lamp	Output	OFF	switch 1st po- sition	ON	Battery voltage	
					Lighting	OFF	0V	
50	W	Front fog lamp (LH)	Output	ON or START	switch must be in the 2nd position (LOW beam is ON) and the front fog lamp switch	ON	Battery voltage	
					Lighting	OFF	0V	
51	V	Front fog lamp (RH)	Output	ON or START	switch must be in the 2nd position (LOW beam is ON) and the front fog lamp switch	ON	Battery voltage	
52	Р	LH low beam head- lamp	Output	_	Lighting switch	in 2nd position	Battery voltage	
54	R	RH low beam head- lamp	Output	_	Lighting switch	in 2nd position	Battery voltage	
55	G	LH high beam head- lamp	Output	_	Lighting switch in 2nd position and placed in HIGH or PASS position		Battery voltage	
56	L	RH high beam head- lamp	Output	_	Lighting switch in 2nd position and placed in HIGH or PASS position		Battery voltage	
		Parking, license, and	0 : :	611	Lighting	OFF	0V	
57	GR	tail lamp	Output	ON	switch 1st po- sition	ON	Battery voltage	
59	В	Ground	Input	_	-	_	0V	
60	CD	Rear window defog-	Outer:4	ON or	Rear defogger switch ON		Battery voltage	
60	GR	ger relay	Output	START	Rear defogger switch OFF		0V	
61	R/B	Fuse 32	Output	OFF	-	_	Battery voltage	

¹: For Mexico

< ECU DIAGNOSIS INFORMATION >

²: Except for Mexico

3: When horn reminder is ON

Fail Safe INFOID:0000000009225432

CAN COMMUNICATION CONTROL

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With ECM

Control part	Fail-safe in operation	
Cooling fan	 Turns ON the cooling fan relay when the ignition switch is turned ON Turns OFF the cooling fan relay when the ignition switch is turned OFF 	

If No CAN Communication Is Available With BCM

Control part	Fail-safe in operation
Headlamp	Turns ON the headlamp low relay when the ignition switch is turned ON Turns OFF the headlamp low relay when the ignition switch is turned OFF Headlamp (LH/RH) high relays OFF
Parking lampsLicense plate lampsTail lamps	Turns ON the tail lamp relay when the ignition switch is turned ON Turns OFF the tail lamp relay when the ignition switch is turned OFF
Front wiper	 The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating.
Rear window defogger	Rear window defogger relay OFF
A/C compressor (if equipped)	A/C relay OFF
Front fog lamps (if equipped)	Front fog lamp relay OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit and excitation coil circuit of the ignition relay inside it.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the excitation coil circuit.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

Ignition switch	Ignition relay	Tail lamp relay
ON	ON	_
OFF	OFF	_

The tail lamp turns OFF when the ignition switch is turned ON.

FRONT WIPER CONTROL

Revision: December 2012

IPDM E/R detects front wiper stop position by a front wiper auto stop signal.

When a front wiper auto stop signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 second activation and 20 second stop five times.

Ignition switch	Front wiper switch	Auto stop signal
ON	OFF	Front wiper stop position signal cannot be input 10 seconds.
	ON	The signal does not change for 10 seconds.

NOTE:

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2013 Frontier

< ECU DIAGNOSIS INFORMATION >

This operation status can be confirmed on the IPDM E/R "DATA MONITOR" that displays "Block" for the item "WIP PROT" while the wiper is stopped.

STARTER MOTOR PROTECTION FUNCTION

IPDM E/R turns OFF the starter control relay to protect the starter motor when the starter control relay remains active for 90 seconds.

DTC Index

CONSULT display	Fail-safe	TIME ^{NOTE}		Refer to
No DTC is detected. further testing may be required.	_	_	_	_
U1000: CAN COMM CIRCUIT	×	CRNT	1 – 39	PCS-13

NOTE:

The details of TIME display are as follows.

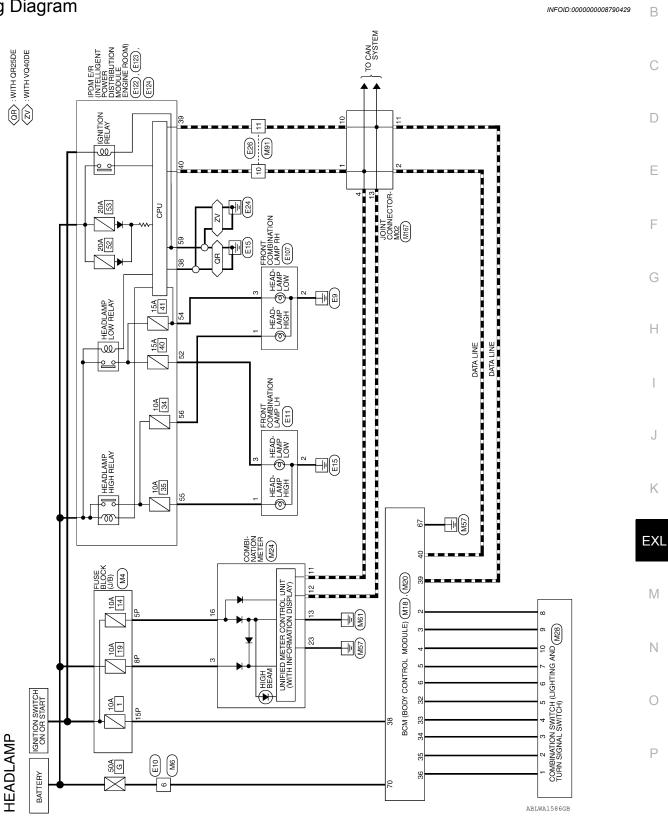
- · CRNT: The malfunctions that are detected now
- 1 39: The number is indicated when it is normal at present and a malfunction was detected in the past. It increases like 0 → 1 → 2 ··· 38 → 39 after returning to the normal condition whenever IGN OFF → ON. It is fixed to 39 until the self-diagnosis results are erased if it is over 39. It returns to 0 when a malfunction is detected again in the process.

Α

WIRING DIAGRAM

HEADLAMP

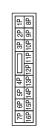
Wiring Diagram



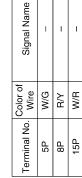
HEADLAMP CONNECTORS

Connector Name WIRE TO WIRE Connector Color WHITE

Connector No. M6







Signal Name

Color of Wire ≥

Terminal No.

M20	Connector Name BCM (BODY CONTROL MODULE)	BLACK	
Connector No.	Connector Name	Connector Color BLACK	





Signal Name	INPUT 2	INPUT 1	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	OUTPUT 1	MS N9I	CAN-H	CAN-L
Color of Wire	_	œ	0	GR	ŋ	BR	LG	W/R	_	Д
Ferminal No.	5	9	32	33	34	35	36	38	39	40

	M18
Connector Name BCM (BODY COI	BCM (BODY CONTROL MODULE)
Connector Color WHITE	HITE
原 H.S.	
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	10 11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39	9 30 31 32 33 34 35 36 37 38 39 40

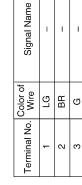


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Signal Name	ı	ı	1	ı	ı	_	1
Color of Wire	GR	0	Œ	_	Ь	SB	^
Terminal No. Wire	4	5	9	7	8	6	10

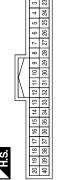
Connector No.	M28
Connector Name	Connector Name COMBINATION SWITCH
Connector Color WHITE	WHITE
	ī.
F	12 13 10 10 19 8 7
SE	14 11 1 2 3 4 5 6





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/	11 10 9 8 7 6 5 4 3 2 1	40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21	Signal Name	BATTERY	CAN-L	CAN-H	GROUND	RUN START	POWER GND
\ 	14 13 12	34 33 32 3	Color of Wire	R/Υ	۵	_	GR	W/G	В
	20 19 18 17 16 15 14 13 12 11 10 9	40 39 38 37 36 35	Terminal No.		1	12	13	16	23

_	_	_	1		_
0	WIRE TO WIRE	WHITE	8 2 3 4	Signal Name	1
. E10			4	Color of Wire	8
Connector No.	Connector Name	Connector Color	赋 H.S.	Terminal No. Wire	9

<u>-</u>		9
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	3 2	12
	3	13
울	4	4
	5	45
. [2][]]	9	9
M167 JOINT BLUE	7	20 19 18 17 16 15 14 13 12 11 10
	8	<u></u> Θ
ا ا	6	9
or No. M167 or Name JOINT CONNECTOR-M02 or Color BLUE	\overline{a}	20

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onnector	onnector	ď
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3 2 1	12 11 10 9 8	Signal Name	I
4	13		
Ŋ	14		
9	16 15 14		
7	16	color of Wire	П

Signal Name

Terminal No. Color of Wire

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Connector Name WIRE TO WIRE

M91

Connector No.

Connector Color WHITE



Sign			
Color of Wire	Ь	_	
Terminal No.	10	11	

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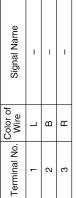
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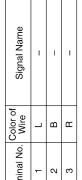
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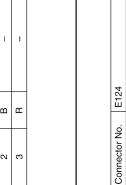
Р

Connector No.	E107
Connector Name	Connector Name FRONT COMBINATION LAMP RH
Connector Color BLACK	BLACK

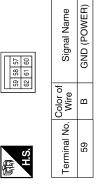






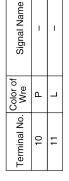




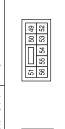








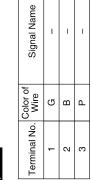
E123	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	BROWN
Connector No.	Connector Name	Connector Color BROWN



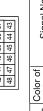
Signal Name	H/LAMP LO LH	H/LAMP LO RH	H/LAMP HI LH	H/LAMP HI RH
Color of Wire	Д	н	ŋ	٦
Terminal No.	52	54	55	99











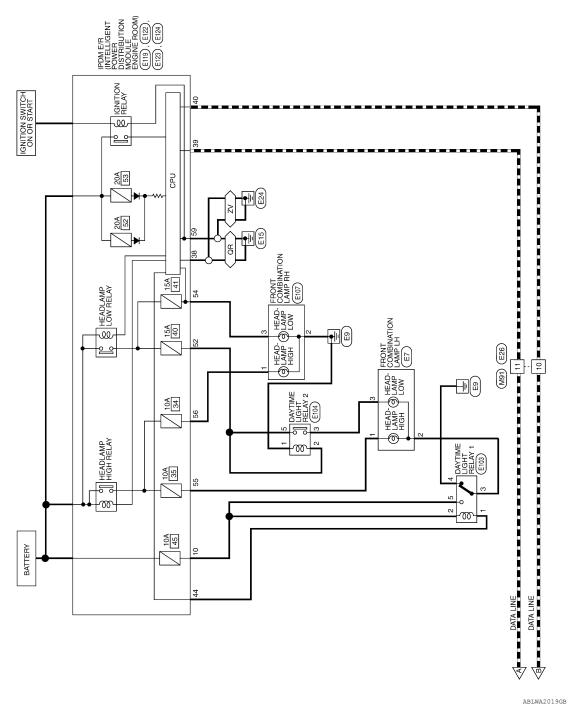
Signal Name	GND (SIGNAL	CAN-H	CAN-L
Color of Wire	В	_	Д
Terminal No.	38	39	40

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DAYTIME LIGHT SYSTEM Α Wiring Diagram INFOID:0000000008790430 COMBINATION METER (M24) В GENERATOR (E205), (E209) С CHARGE E40 D BRAKE Е F M40 _ FUSE BLOCK (J/B) (M4) G UNIFIED METER CONTROL UNIT (WITH INFORMATION DISPLAY) Н 10A 10A JOINT CONNECTOR-M02 (M167) J Κ , (M20) EXL BCM (BODY CONTROL MODULE) (M18), IGNITION SWITCH ON OR START COMBINATION SWITCH (LIGHTING AND TURN SIGNAL SWITCH) (M28) 10A M DAYTIME LIGHT SYSTEM Ν M6 E10 BATTERY 0 Р

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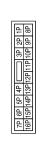


DAYTIME LIGHT SYSTEM CONNECTORS

Connector No.	M4
Connector Name	Connector Name FUSE BLOCK (J/B)
Connector Color WHITE	WHITE
42 E	7P 6P 5P 4P 3P 2P 1P
16P	16P15P14P13P13P119P11P110P19P18P

Connector No. M6
Connector Name WIRE TO WIRE

Connector Color WHITE





Signal Name

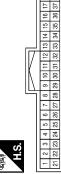
Color of Wire ≥

Terminal No. 9

Signal Name	I	I	1	
Color of Wire	M/G	R/Υ	W/R	
Terminal No.	2P	8P	15P	

Connector No.	o. M20	0
Connector Name		BCM (BODY CONTROL MODULE)
Connector Color		BLACK
^呵 奇 H.S.	<u> 56 57 56</u>	85 57 86 89 80 61 82 83 84 65 67 68 69 70
Terminal No.	Color of Wire	Signal Name
29	В	GND (POWER)
70	Μ	BAT (F/L)

M18	Connector Name BCM (BODY CONTROL MODULE)	or WHITE	
Connector No.	Connector Nam	Connector Color WHITE	



Signal Name	INPUT 5	INPUT 4	C H
Color of Wire	Д	SB	``
Terminal No.	2	င	•

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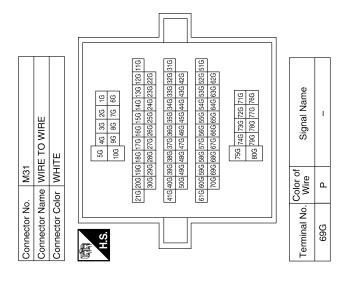
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	ИB	쁘				l
M28	Ö	WHITE		13	=	l
2	0			12	14	l
No.	Name COMBINATION SWITCH	Color				J

Signal Name	1	1	I	_	ı	I	-	-	I	ı
Color of Wire	LG	BR	В	GR	0	Œ	Т	Ь	SB	^
Terminal No.	1	2	3	4	2	9	7	8	6	10



Connector No.	M24
Connector Name	Connector Name COMBINATION METER
Connector Color WHITE	WHITE

Signal Name	CHARGE (ALT) INPUT	BATTERY	CAN-L	CAN-H	GROUND	RUN START	POWER GND	PARK BRAKE SW
Color of Wire	Ь	R/Y	Ь	٦	GR	W/G	В	g
Terminal No.	2	3	11	12	13	16	23	31

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DAYTIME LIGHT SYSTEM

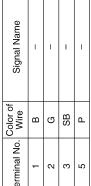
			Α
20 19 18 17 16 15 14 13 12 11 10 Color of P	WIRE TO WIRE WHITE 2 3	Signal Name	В
nector Nc nector Nc nector Nc nector Nc nector Nc ninal No.	nector No.	Color of Wire 10 P 11 L	C
		Ter	Е
			F
Signal Name	E TO WIRE	Signal Name	G H
M91	2. E10 ame WIRE T J J J J J J J J J J J J J J J J J J	Color of Wire	
M91 Connector Name WIRE TO WIRE Connector Color WHITE Connector Color WHITE Connector Color of Signal	Connector No. E10 Connector Name WIRE TO WIRE Connector Color WHITE	Terminal No. 6	J
			K
2.0 M40 WIRE TO WIRE Sul 41 Sul 22 13 100 Sul 82 12 13 100 Sul 82 12 13 101 Sul 12 141 102 Sul 82 12 13 103 Sul 82 12 13 104 Sul 82 12 13 105 Sul 82 12 13 107 Sul 82 13 13 1	E7 FRONT COMBINATION LIGHT SYSTEM) BLACK	Signal Name	EXL
21/2 (2M) 154/2 (2M) 254/2 (2M) 2		Color of Wire SB SB	N
Connector No. M40 Connector Name WIRE TO WIRE Connector Color WHITE Su 41 33 2	Connector No. Connector Name Connector Color H.S.	Terminal No.	0
	1	ABLIA3312GB	Р

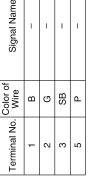
Revision: December 2012 **EXL-81** 2013 Frontier

Connector Name DAYTIME LIGHT RELAY 2 Connector Color BLUE	Connector No.	E104
Connector Color BLUE	Connector Name	DAYTIME LIGHT RELAY 2
	Connector Color	BLUE

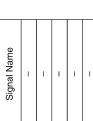


Signal Name	ı	ı	-	_
Color of Wire	В	ŋ	SB	Ь
Terminal No. Wire	-	2	8	9







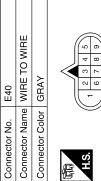






Signa					
Color of Wire	œ	B/B	В	ВĐ	B/B
Terminal No.	-	2	3	4	5

E103	Connector Name DAYTIME LIGHT RELAY 1	BLACK	5 4 5
Connector No.	Connector Name	Connector Color BLACK	嘶 H.S.







Signal Name	_	
Color of Wire	Ь	
Terminal No.	8	

22	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	HE HE	42 41 40 39 38 37	Signal Name
. E122		lor WH	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Color of
Connector No.	Connector Name	Connector Color WHITE	崎 H.S.	Color o Terminal No. Wire

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GND (SIGNAL) CAN-H CAN-L

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DTRL RLY SUPPLY

Signal Name

E119	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	WHITE	9 8 7 6 6 5 4 3 18 17 16 15 14 13 12 11 10
Connector No.	Connector Name	Connector Color WHITE	





FRONT COMBINATION LAMP RH	BLACK	3 2 1
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E107

Connector No.



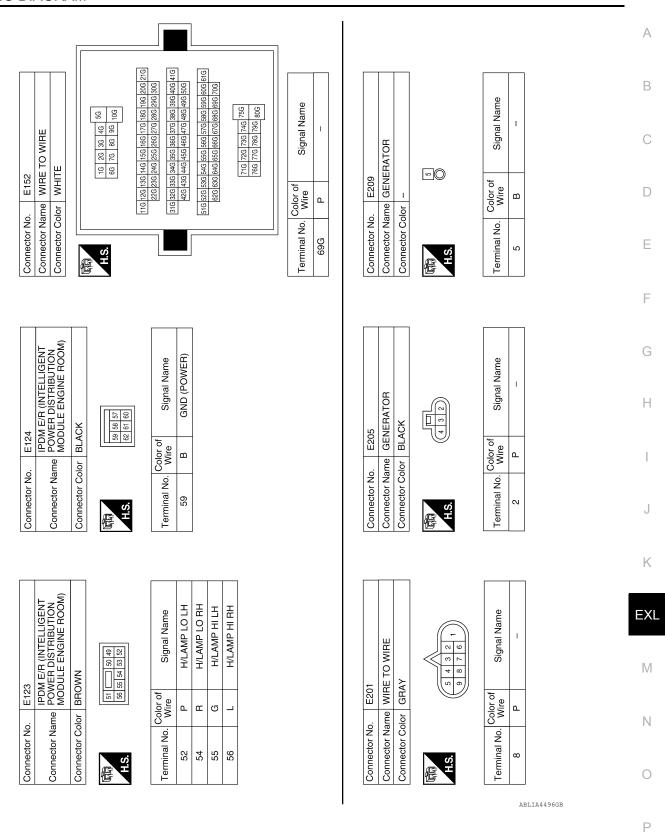
Signal Nam	ı	-	1
Color of Wire	_	В	В
Terminal No.	-	2	3

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Sonnector Name	Connector Color	
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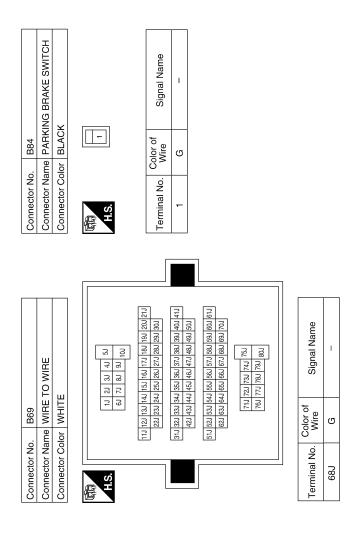
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DAYTIME LIGHT SYSTEM

< WIRING DIAGRAM >



Revision: December 2012 **EXL-83** 2013 Frontier

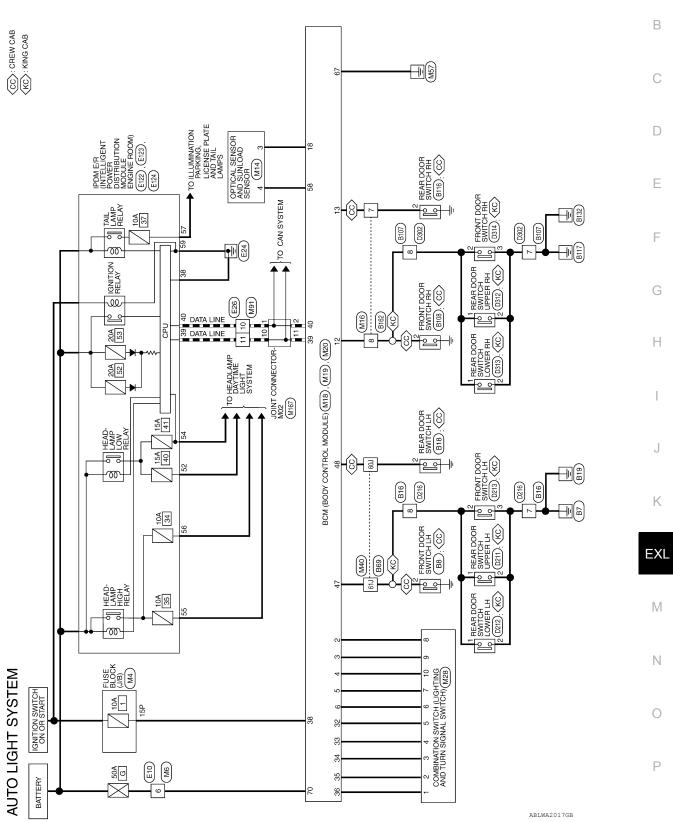


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AUTO LIGHT SYSTEM

Wiring Diagram

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AUTO LIGHT SYSTEM CONNECTORS

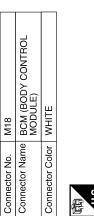
M4	onnector Name FUSE BLOCK (J/B)	WHITE
Connector No.	Connector Name	Connector Color WHITE

4	Connector Name OPTICAL SENSOR AND	SUNLOAD SENSOR	ACK	0 1 0 0 0 0 0 0 0 0	Signal Name	ı
). M14	ame OP	S	olor BL		Color of Wire	۵
Connector No.	Connector Na		Connector Color BLACK	原动 H.S.	Terminal No. Wire	8
	VIRE				Signal Name	ı
	₹E TO V	II.		- 4		
Connector No. M6	Connector Name WIRE TO WIRE	Connector Color WHITE			Terminal No. Color of Si	×

Signal Name

Color of Wire W/R

Terminal No. 15P



	20	9 40					
	92	39					
	18	38					
	17	37					
	16	36 37		Φ			
	15	35			2	4	က
	10 11 12 13 14 15 16 17 18 19	34 35		Signal Name	INPUT 5	INPUT 4	INPUT 3
	13	30 31 32 33		l la	<u> </u>	<u> </u>	<u> </u>
117	12	32		l iĝ	=	=	=
IV	=	31		0,			
11	10	30					
\	6	29					
	_∞	28 29		Terminal No. Wire		_	
	7	27		홍충	₾	SB	>
	9	22 23 24 25 26 27		0			
	5	25		o.			
	4	24		Z			
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Connector No.	o. M16	9
Connector Name		WIRE TO WIRE
Connector Color	olor W	WHITE
咸南 H.S.	6 5 11 12 5	10 9 8 7 1
Terminal No. Wire	Color of Wire	Signal Name
7	٦	I
8	PI	I

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Connector No. M28	Terminal No. Color of Signal Name 1	Connector No. M91	A B C D
			F
M20 BCM (BODY CONTROL MODULE) BLACK STSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS	Signal Name AUTO LIGHT SENSOR INPUT 2 GND (POWER) BAT (F/L)	Signal Name	G
	Color of Wire W	Wire GR	Н
Connector No. Connector Name Connector Color			
Conne	Terminal No. 58 67 70	Terminal No. 60.0 61.0	J
			K
TROL	Wame W (DR) N (RL)	11 14 133 122 144 133 122 147 148 133 122 149 123 123 149 123 149 123 123 149	EXL
Connector No. M19 Connector Name BCM (BODY CONTRO) MODULE) Connector Color WHITE	Signal Name DOOR SW (DR) DOOR SW (RL)	5. M40 MINE TO WIRE Su 41 31 24 14 Su 220 320 277 280 250 324 323 414 400 380 380 377 380 350 354 453 Fu 400 380 380 377 380 350 354 353 Fu 600 580 580 577 380 350 554 553 Fu 600 580 580 577 380 350 554 553 Fu 600 580 580 577 380 350 554 553 Fu 600 580 580 577 380 350 554 553 Fu 600 580 580 577 380 580 554 553 Fu 600 580 580 577 380 580 554 553 Fu 600 580 580 577 380 580 554 553 Fu 600 580 580 577 380 577 373 773 773 Fu 600 580 580 577 380 577 373 773 773	M
me BCM (E MODU Or WHITE	Color of Wire GR	M40 M40 M1RE T M40 M1RE T M40 M1RE T M10 M1 M10 M1	N
Connector No. M19 Connector Name BCM (B MODUL Connector Color WHITE	al No.	nector Nc nector Nc	
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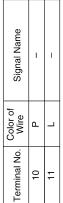
Revision: December 2012 **EXL-87** 2013 Frontier

AUTO LIGHT SYSTEM

< WIRING DIAGRAM >



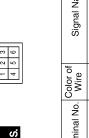
8 9 10 11 12 13 14 15 16	Signal Name	-	
8 9 10	Color of Wire	Ь	_
i.S.	minal No.	10	-



Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM

Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM	OK	58 57 61 60	Signal Name	TAIL LAMP	GND (POWER)
	lor BLA	65 59	Color of Wire	GR	В
Connector Na	Connector Color BLACK	画 H.S.	Terminal No.	25	69





I	Μ	9
Signal Nan	Color of Wire	Terminal No.

E123	Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM)	BROWN	
Connector No.	Connector Name	Connector Color BROWN	

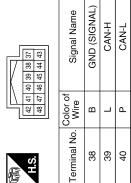
51 50 49 55 54 53 52	Signal Name	H/LAMP LO LH	H/LAMP LO RH	H/LAMP HI LH	H/LAMP HI RH
55	Color of Wire	Ь	В	ŋ	_
H.S.	Terminal No.	52	54	55	56

Connector No.	M167
Connector Name	Connector Name JOINT CONNECTOR-M02
Connector Color BLUE	BLUE



Signal Name	ı	ı	ı	ı
Color of Wire	۵	۵	_	٦
Terminal No. Wire	-	2	10	11

E122	Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM)	WHITE	
Connector No.	Connector Name	Connector Color WHITE	



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	А
Connector No. B18 Connector Name REAR DOOR SWITCH LH Connector Color of Signal Name 2 P Connector Name FRONT DOOR SWITCH RH (CREW CAB) Connector Name FRONT DOOR SWITCH RH (CREW CAB) Connector Color of Signal Name 2 P Connector Name FRONT DOOR SWITCH RH (CREW CAB) Connector Color of Signal Name 2 LG	В
Connector No. B18 Connector Name REAR D Connector Color WHITE 2 Connector No. B108 Connector Name FRONT RH (CR) Connector Color of RH (CR) Terminal No. Wire 2 LG	D
Connector No. Connector Name Connector No. C	Е
	F
Signal Name Signal Name Signal Name	G
	Н
Connector No. B16 Connector No. Wire Terminal No. Wire Terminal No. Wire Terminal No. Wire Terminal No. Wire Tonnector Color of Terminal No. Wire T B T B T B T B T B T B T B T B T B T B	I
Connec Connec Connec Connec Connec Connec Connec Connec Connec Connec	J
2H LH 2m 21/1 2m 21/1	K
Nam	EXL
	M
minal No. God	N
S S S S S S S S S S S S S S S S S S S	0

EXL-89 Revision: December 2012 2013 Frontier

Connector No. D211 Connector Name REAR DOOR SWITCH UPPER LH Connector Color BLACK	Terminal No. Color of Wire Signal Name 1 L	Connector No. D216 Connector Name WIRE TO WIRE Connector Color WHITE Terminal No. Color of Signal Name	7 B 8
Connector No. B162	Terminal No. Color of Signal Name 7 L -	Connector No. D213 Connector Name FRONT DOOR SWITCH LH (KING CAB) Connector Color WHITE H.S. Terminal No. Color of Signal Name	2 LG
Connector No. B116 Connector Name REAR DOOR SWITCH RH Connector Color WHITE	Terminal No. Color of Signal Name 2 L -	Connector No. D212 Connector Name REAR DOOR SWITCH LOWER LH Connector Color BLACK LAS Color of ETI Signal Name	2 B

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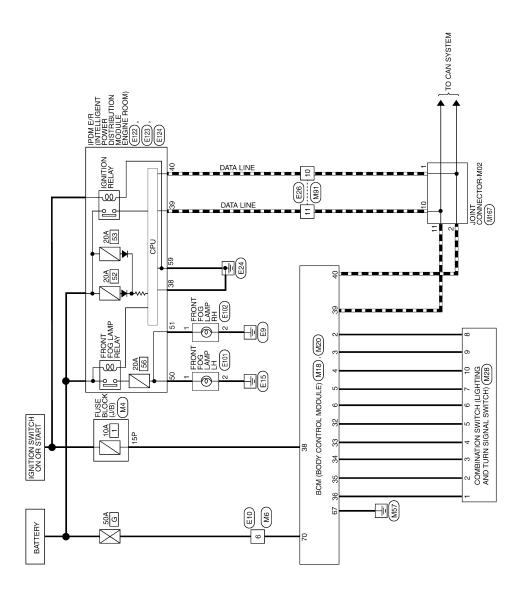
		F
D313 REAR DOOR SWITCH LOWER RH BLACK	Signal Name	E
	Oolor of Wire B	[
Connector No. Connector Color	Terminal No.	E
		ſ
змітсн	Signal Name	(
D312 REAR DOOR SWITCH UPPER RH BLACK		I
	Color of Wire B L	
Connector No. Connector Color H.S.	Terminal No.	
		1
#	Signal Name	E
D302 WIRE TO WIRE WHITE	(KING DANT D D DANT	ı
9 2 2 3	Colo Name Colo N	ı
Connector No. Connector Col		(
	I A	BLIA4494GB

Revision: December 2012 **EXL-91** 2013 Frontier

FRONT FOG LAMP

Wiring Diagram

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FRONT FOG LAMP

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Connector No. M6
Connector Name WIRE TO WIRE

Connector Color WHITE

Connector No.	4	
Connector Na	me FUS	Connector Name FUSE BLOCK (J/B)
Connector Color WHITE	lor WHI	2
所 H.S.	7P 6P 5P 4P (4P 3P 2P 1P
Terminal No. Wire	Color of Wire	Signal Name
15P	W/R	ı

Signal Name

Color of Wire W

Terminal No.

	BCM (BODY CONTROL MODULE)		67 68 69 70	Signal Name	GND (POWER)	L H
M20		BLACK	55 57 58 59 60 61 62 63 64 65 1 70 68 69 1 70	Color of Wire	В С	, 41
Connector No.	Connector Name	Connector Color	是 H.S.	Terminal No.	29	1

Signal Name	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	OUTPUT 1	IGN SW	CAN-H	CAN-L
Color of Wire	0	GR	G	BR	ГG	W/R	Г	Ь
Terminal No.	32	33	34	35	36	38	39	40

ιοί	Connector No.	tor	ž			Ż	M18										
ΙĘ	Connector Name	ţ	ž	Ĕ		⊠ĕ	BCM (BOE MODULE)	<u>@</u> ₫	ΙĞΨ	≿ .	ပြ	IS	BCM (BODY CONTROL MODULE)	ΙĒ	١		
Ι⋤	Connector Color WHITE	ğ	ပြ	<u>ē</u>	+	∣⋝		쁘									_
	E.S.							IN.	IV.	117	لے						
	2 3	4	ß	9	7	ω	6	9	Ξ	12	13	4	10 11 12 13 14 15 16	9	17	8	9
2	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39	24	25	92	27	88	8	8	3	8	8	8	સ્ટ	æ	37	æ	8

Signal Name	INPUT 5	INPUT 4	INPUT 3	INPUT 2	INPUT 1
Color of Wire	Д	SB	۸	٦	В
Terminal No. Wire	2	3	4	5	6

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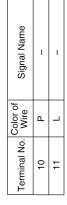
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Connector No.	M91
Connector Name WIRE TO WIRE	WIRE TO WIRE
Connector Color WHITE	WHITE

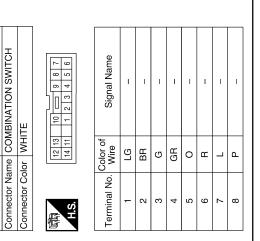


Signal Name	1	-
Color of Wire	Д	Г
Terminal No. Wire	10	11

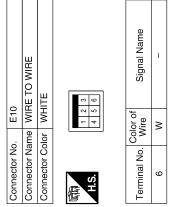


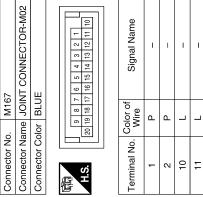
Signal Name	I	_
Color of Wire	SB	Λ
Terminal No.	6	10

Connector No. M28



	WIRE TO WIRE	ш	2 3 mm 4 5 6 7 9 10 11 12 13 14 15 16	Signal Name	I	ı
. E26		lor WHITE	8 9 10	Color of Wire	Ь	_
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	10	-





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FRONT FOG LAMP

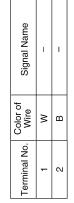
Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color WHITE	WHITE
原南 H.S.	42 41 40 39 38 37 46 45 44 43

Signal Name	GND (SIGNAL)	CAN-H	CAN-L
Color of Wire	В	٦	Ь
Terminal No.	38	39	40

Connector No.	. E102	
Connector Name		FRONT FOG LAMP RH
Connector Color	lor BLACK	X
	برات	
Terminal No.	Color of Wire	Signal Name
	>	ı
	В	I

	14	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	CK	28 57 89 19	Signal Name	(מבוייוסם) טואט
	E124		or BLACK	29	Color of Wire	α
	Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	20

Connector No. E101 Connector Name FRONT Connector Color BLACK	Connector No. E101 Connector Name FRONT FOG LAMP LH Connector Color BLACK
E	



Connector No.	E123
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM
Connector Color BROWN	BROWN

56 55 54 53 52	Signal Name	FR FOG LAMP LH	51 V FR FOG I AMP BH
56 55	Color of Wire	Μ	>
(内) H.S.	Terminal No.	20	51

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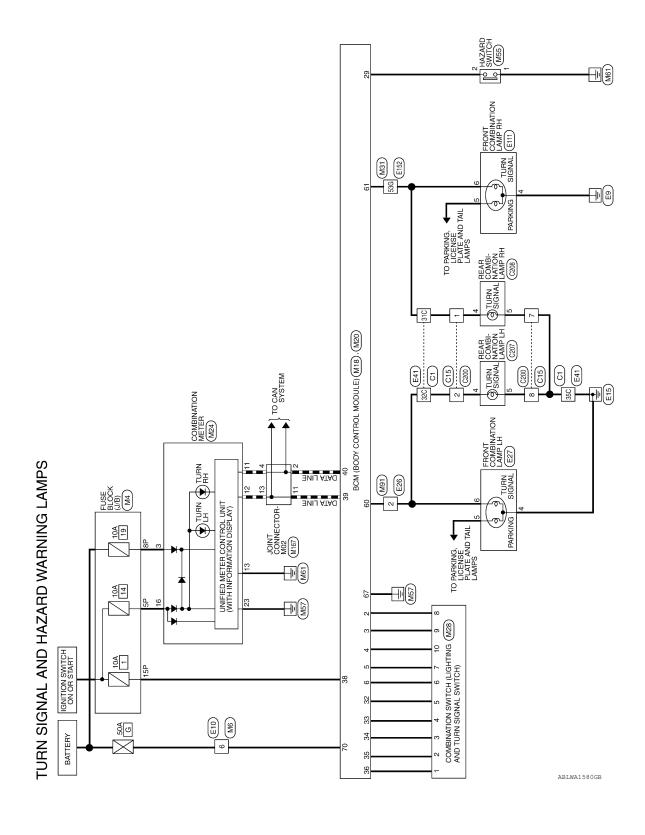
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Wiring Diagram



TURN SIGNAL AND HAZARD WARNING LAMPS CONNECTORS

Connector No. M6
Connector Name WIRE TO WIRE

Connector Color WHITE

Connector No.	M4
Connector Name	Connector Name FUSE BLOCK (J/B)
Connector Color WHITE	WHITE
	7P 6P 5P 4P 3P 2P 1P
16P	16P[15P[14P[13P[12P[11P[10P] 9P] 8P]]

		l			
J/B)			2P 1P	9P 8P	
or Name FUSE BLOCK (J/B)			B □	2P 11P 10P	
JSE BI	WHITE		5P 4P [14P 13P1	
me Fl	lor		7P 6P	16P 15P	
or Na	or Color				

Signal Name	-	1	1	
Color of Wire	M/G	R/Y	W/R	
Terminal No.	2P	8P	15P	

Signal Name

Color of Wire ≥

Terminal No.

	BCM (BODY CONTROL MODULE)	CK	86 67 68 69 70 10 10 10 10 10 10 10	Signal Name	FLASHER OUTPUT (LEFT)	FLASHER OUTPUT (RIGHT)	GND (POWER)
. M20		lor BLACK	1865	Color of Wire	ΓG	ŋ	В
Connector No.	Connector Name	Connector Color	峤 H.S.	Terminal No.	09	61	29

Signal Name	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	OUTPUT 1	IGN SW	CAN-H	CAN-L
Color of Wire	0	GR	В	BR	FG	W/R	_	Ь
Terminal No.	32	33	34	35	36	38	39	40

M18	Connector Name BCM (BODY CONTROL MODULE)	WHITE	
Connector No.	Connector Name	Connector Color WHITE	

	9	36		l
	5	34 35		l
	7	8		l
	13 14	33		l
117	12	32		l
IV.	=	31		l
IN.	9	30 31		l
$\parallel \parallel \setminus$	6	ಭ		ŀ
	8	25 26 27 28		l
	7	27		l
	9	26		L
	2	25		l
	4	24		l
	က	21 22 23 24		l
<u>, 2</u>	7	22		l
	_	7		l
			_	

		_	_	_	_	_
Signal Name	S TUPNI	INPUT 4	E TUPNI	INPUT 2	INPUT 1	HAZARD SW
Color of Wire	Ь	SB	>	_	œ	G
Terminal No. Wire	2	3	4	5	9	29

BAT (F/L)

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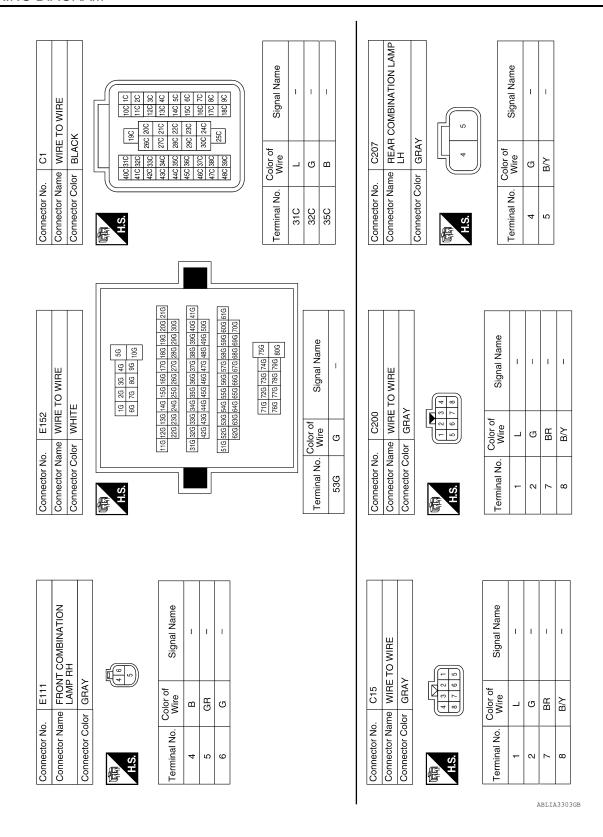
< WIRING DIAGRAM >

Olginal Ivaline	-	-											M55 HAZARD SWITCH		Signal Name
Wire	SB	^													⊣ <u> </u>
	6	10											Connector No.	Connector Color	H.S. Terminal No.
SWITCH			5 6 7	Signal Name		1	1	1	1	1	1		Signal Name		
Connector Name COMBINATION SWITCH	WHITE		100 1 1 2 3 4 4 9												
ame CC			12 13 14 11	Color of Wire	ا ا	BB	G	GR	0	œ	_	۵	Color of Wire	ŋ	
Connector Na	Connector Color		用.S.	Terminal No.	-	2	က	4	5	9	7	8	Terminal No.	53G	
Connector Name COMBINATION METER	ш		7	10 9 8 7 6 5 4 3 2 1 30 29 28 27 26 25 24 23 22 21		Signal Name	BATTERY	CAN-L	CAN-H	GROUND	RUN START	POWER GND	M31 WIRE TO WIRE		21G 20G 19G 18G 17G 16G 17G 17G 17G 17G 18G 17G 17G 17G 18G 17G 17G 18G 17G 17G 17G 18G 17G 17G 17G 18G 17G 17G 17G 18G 17G 17G 17G 17G 17G 17G 17G 17G 17G 17
me COM	lor WHITE			20 19 18 17 16 15 14 13 12 11 10 9 40 39 38 37 36 35 34 33 32 31 30 29	Color of	Wire	R/Υ	۵	_	GR	M/G	В	. M31	lor WHITE	110 200 190 200 200 200 200 200 200 200 200 200 2
ā	Connector Color			17 16 15 37 36 35		Terminal No.	က	7	12	13	16	23	Connector No.	Connector Color	S T

< WIRING DIAGRAM >

Connector No. E10 Connector Name WIRE TO WIRE Connector Color WHITE	Signal Name Signal Name Wire W	Connector No. E41 Connector Name WIRE TO WIRE Connector Color BLACK Line 200 200 200 200 200 200 200 200 200 20	A B C
Connector No. Connector Cold	Terminal No. 6	Connector No. Connector Colc Connector Colc Solution 10. Terminal No. 31C 32C 35C 35C	E
	, []]]		F
Connector No. M167 Connector Name JOINT CONNECTOR-M02 Connector Color BLUE	Signal Name	FRONT COMBINATION LAMP LH GRAY or of Signal Name - R	G H
3. M167 Name JOINT CONNEC JOINT CONNEC BLUE 9 8 7 6 5 4 3 3 3 3 3 3 3 3 3	Color of Wire P P L L L L L L L L L L L L L L L L L	I	П
Connector No. M167 Connector Name JOINT Connector Color BLUE	Terminal No. 2 4 4 11 13	Connector No. Connector Name Connector Color H.S. F. Color F. Co	J
			K
N O O O O O O O O O	Vame	WIRE 13 14 15 16 15 16 16 16 16 16 16 16 16 16 16 16 16 16	EXL
	Signal Name		M
Connector No. M91 Connector Name WIRE TO WIRE Connector Color WHITE	No. Wire		N
Connector No. Connector Name Connector Color H.S.	Terminal No.	Connector No. Connector Name Connector Color Terminal No. Co	0
		ABLIA3302GB	Р

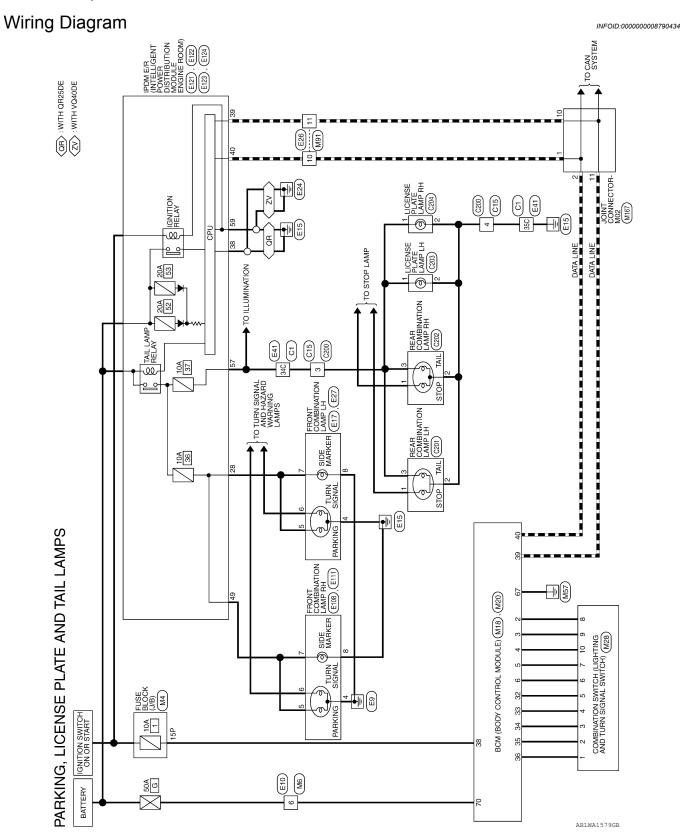
Revision: December 2012 **EXL-99** 2013 Frontier



i i	REAR COMBINATION LAMP RH	,	2	Signal Name	ı	_
		or GRAY	4	Color of Wire	٦	BR
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	4	5

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GND (POWER)

BAT (F/L)

≥ Ш

Signal Name

Color of Wire

Terminal No. 67

PARKING, LICENSE PLATE AND TAIL LAMPS CONNECTORS

M4	Connector Name FUSE BLOCK (J/B)	WHITE	
Connector No.	Connector Name	Connector Color WHITE	

1			
	_	_	1
	₽	8	
	2P	9P	
	3P	10P	
	П	11	
	Ш	12P	
	4P	13P	
	SP	14P	
	99	15P	
	7P	16P	
			_



Signal Naı	_
Color of Wire	W/R
Terminal No.	15P

Signal Name

	Connector Name WIRE TO WIRE	HTE	2 8	Signal N	1
o. M6	ame WI	olor WF	9	Color of Wire	Α
Connector No.	Connector Na	Connector Color WHITE	原型 H.S.	Terminal No. Wire	9
	SE BLOCK (J/B)	ITE	P 4P 2P 1P 1P 1P 1P 1P 1P 1P 1P 1P 1	Signal Name	ı

M20	Connector Name BCM (BODY CONTROL	MODULE)	BLACK	200 000 000 000 000	56 57 58 59 60 61 62 63 64 65 65 67 68 69 70	
Connector No. M20	Connector Name		Connector Color BLACK	ą	this in	,
Signal Name	2	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	

Signal Name	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	OUTPUT 1	IGN SW	CAN-H	CAN-L
Color of Wire	0	GR	В	BR	ГG	W/R	٦	Ь
Terminal No.	32	33	34	35	36	38	39	40

					_
Signal Name	INPUT 5	INPUT 4	INPUT 3	INPUT 2	INPUT 1
Color of Wire	۵	SB	>	_	Œ
Color of Wire	2	3	4	5	9

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Connector Name BCM (BODY CONTROL MODULE)

Connector Color

M18

Connector No.

< WIRING DIAGRAM >

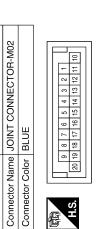
Connector No.	. M91	
nector Na	me WIR	Connector Name WIRE TO WIRE
Connector Color WHITE	lor WHI	TE
南 H.S.	7 6 5 14 15 14	5 4 3 2 1 14 13 12 11 10 9 8
Terminal No.	Color of Wire	Signal Name
10	Ь	ı
1	_	1

Signal Name	-	_	
Color of Wire	SB	^	
nal No.	6	0	

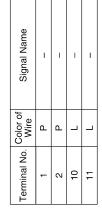
	COMBINATION SWITCH	TE	8 6	1 2 3 4 5 6	Signal Name	I	-	I	ı	-	_	_	ı
. M28	_	lor WHITE		14 11	Color of Wire	LG	BR	В	GR	0	В	L	Д
Connector No.	Connector Name	Connector Color	E	H.S.	Terminal No.	-	2	3	4	5	9	7	8

Connector No.		E17
Connector Na	ame F	Connector Name FRONT COMBINATION LAMP LH
Connector Color GRAY	olor	іВАУ
图 H.S.	8	
Terminal No.	Color of Wire	of Signal Name
7	Œ	ı
α	α	ı

	WIRE TO WIRE	븬	■ ® 9	Signal Name	1
. E10		lor WHITE	- 4 - 2 - 2	Color of Wire	M
Connector No.	Connector Name	Connector Color	南 H.S.	Terminal No. Wire	9



Connector No. M167



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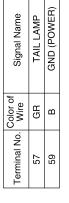
Connector Color BLACK	20 110 190 190 200 260 260 260 260 260 260 260 260 26	21C 27C 22C 28C	23C 29C	7C 16C 24C 30C 37C 40C	25C	Terminal No. Color of Signal Name	35C B –	Connector No. E121	9		- II- II-II I	Terminal No. Wire Signal Name	28 R CLEARANCE FRONT LH			
ATION		lame							ATION			ame				
FRONT COMBINATION LAMP LH GRAY	(2 (4 (9)))	Signal Name	1	1	1			_	FRONT COMBINATION LAMP RH	λt	(4 d)	Signal Name	1	1		
	4	Color of Wire	В	В	FG			No. E111		Connector Color GRAY		Color of Wire	В	GR	O	
Connector Name	H.S.	Terminal No.	4	5	9			Connector No.	Connector Name	Connector	原 H.S.	Terminal No.	4	2	Q	
	,]	
WIRE TO WIRE WHITE 2 3	8 9 10 11 12 13 14 15 16	Signal Name	1	1					Connector Name FRONT COMBINATION LAMP RH			Signal Name	1	ı		
Connector Name WIRE T	01 01	Color of Wire	Ъ	Г				o. E108	ame FRON	olor GRAY	8	Color of Wire	Œ	В		
17171		Terminal No.						Connector No.	tor N	Connector Color		Terminal No.				

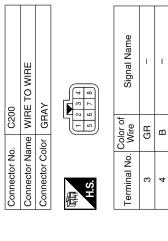
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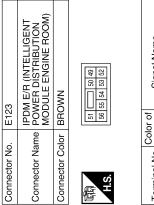
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	Connector No. E124	E124
FELLIGENT CC RIBUTION SINE ROOM)	onnector Name	Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM)
Ö	Connector Color BLACK	BLACK

62 61 60 62 61 80	Signal Name	TAIL LAMP	GND (POWER)	
82 89	Color of Wire	GR	В	
H.S.	erminal No.	22	59	







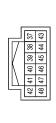
Signal Name	CLEARANCE FRONT RH	
Color of Wire	GR	
Terminal No. Wire	49	

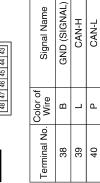
Signal Name	GR CLEARANCE FRONT	
Color of Wire	GR	
Terminal No.	49	

C15	Sonnector Name WIRE TO WIRE	GRAY	
Connector No.	Connector Name	Connector Color GRAY	

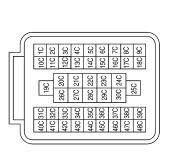
	WIRE TO WIRE	AY	2 -	Signal Name	_	1
	me WIF	lor GRAY	8 7 8	Color of Wire	GR	В
COLLICCION INC.	Connector Name	Connector Color	南 H.S.	Terminal No.	8	4
				,		

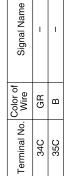
Connector No. E122	Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM)	Sonnector Color WHITE
Connect	Connect	Connect





Connector No.	C1
Connector Name WIRE TO WIRE	WIRE TO WIRE
Connector Color BLACK	BLACK



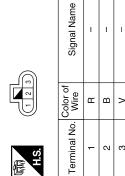


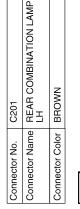
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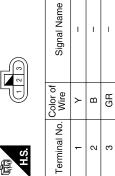
< WIRING DIAGRAM >

3	LICENSE PLATE LAMP LH	АҮ		Signal Name	ı	1
. C203		lor GRAY		Color of Wire	>	В
Connector No.	Connector Name	Connector Color	H.S.	Terminal No. Wire	-	2

tor No. C202	Connector Name REAR COMBINATION LAMP	Connector Color BROWN
Connector No.	Connect	Connect







C204	Connector Name LICENSE PLATE LAMP RH
Connector No.	Connector Name

Sonnector Name LICENSE PLATE LA	AY		Signal Nan	ı	
me LIC	lor GRAY		Color of Wire	>	
Sonnector Na	Connector Color	所 H.S.	Terminal No.	-	

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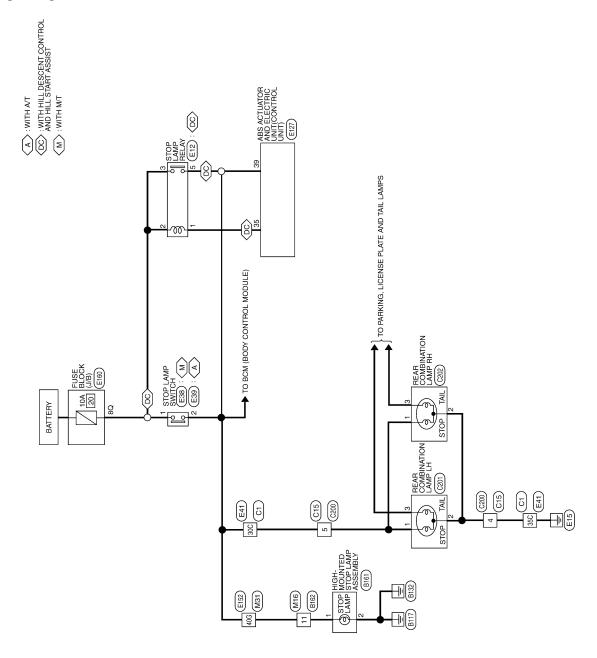
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STOP LAMP

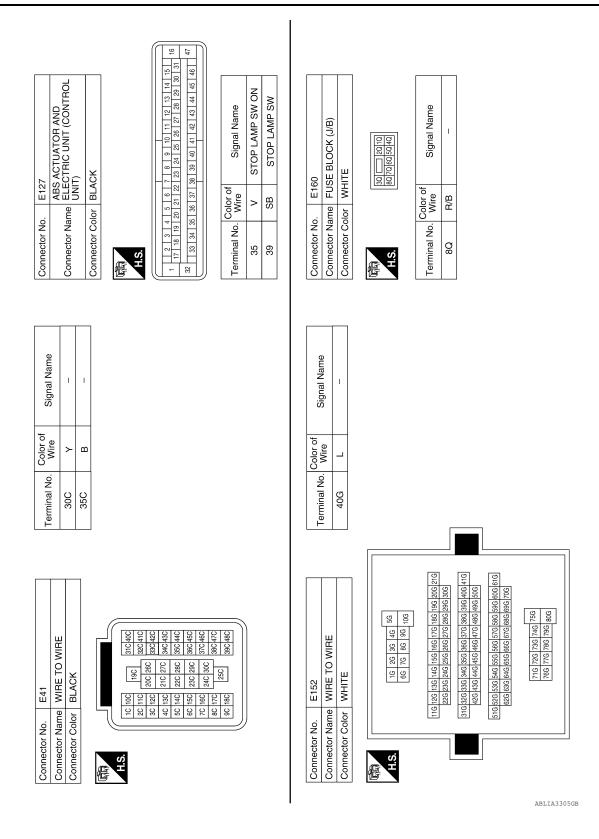
Wiring Diagram



STOP LAMP

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		_											_						Α
	Signal Name	1						THE CHANGE COMMAN	SIOP LAMP SWILCH (WITH A/T)			Signal Name	1	ı					В
	Color of Wire	_								_	2 4 4	Color of Wire	R/B	>					С
	S.	40G						Connector No.	Connector Name	Connector Color									D
	Termir	40						Conne	Conne	Conne	所 H.S.	Terminal No.	_	2					Е
																			F
			9 9 9	136 126 116	33G 32G 31G 43G 42G	53G 52G 51G 63G 62G	96 6		_			Φ							G
	TO WIRE		5G 4G 3G 2G 1 10G 9G 8G 7G 6	21G 200 19G 18G 17G 16G 15G 14G 13G 12G 11G 30G 29G 28G 27G 28G 25G 24G 23G 22G	41G 40G 39G 38G 37G 36G 35G 34G 33G 32G 31G 50G 59G 59G 59G 59G 59G 59G 59G 59G 59G 59	61G 60G 59G 58G 57G 56G 55G 54G 53G 52G 51G 70G 69G 65G 65G 64G 63G 62G 64G 63G 62G 64G 63G 63G	756 746 736 726 716 806 796 786 776 766		WITH M/T)	∠		Signal Name	1	1					Н
	M31 ne WIRE	or WHITE		216 206 190	41G 40G 390 50G 490	61G 60G 590			_	_	2	Color of Wire	R/B	>					I
	Connector No. M31 Connector Name WIRE TO WIRE	Connector Color WHITE	H.S.					Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	_	2					J
										ı									Κ
ECTORS	TO WIRE		- -	Signal Name	1				LAIMP RELAY		<u></u>	Signal Name	1	1	I	1			EX
CONNE	M16 WIRE	ır WHITE	6 5 4 3 12 11 10 9	Color of Wire				E12	or BLUE			Color of Wire	>	R/B	R/B	<u></u>			N.I.
STOP LAMP CONNECTORS	Connector No. M16 Connector Name WIRE TO WIRE	Connector Color WHITE	明.S.	Terminal No.	-			Connector No.	Connector Color BLUE		是 H.S.	Terminal No.	~	2	е	2			N 0
STC																A	BLIA0611GE	3	Р



Connector No. C15 Connector Name WIRE TO WIRE Connector Name WIRE TO WIRE Connector Color GRAY Connector Color GRAY A Signal Name 4 B 5 Y Connector No. C200 Terminal No. Wire 5 Y Connector No. C200 Connector No. C200	Connector No. C15 Connector Name WIRE TO WIRE Connector Color GRAY Connector Color GRAY Terminal No. Wire Signal Name A B B - 5 Y Canadava No. Color of Signal Name Connector No. Color of Signal Name A B - Signal Name Connector No. Color of Signal Name A B - Signal Name Connector No. Color of Signal Name A B - Signal Name Connector No. Color of Signal Name A B C Connector No. Color of Signal Name Connector No. Color of Signal Name A B C C Connector No. Color of Signal Name A B C C C C C C C C C C C C C C C C C C	Connector No. C15 Connector Name WIRE TO WIRE Connector Color GRAY A B	0 IE TO WIRE	Signal Name	
Color of Wire B B B B B B COlor of Wire B B B B B B B B B B B B B B B B B B B	Connector No. C15 Connector Name WIRE TO Connector Color GRAY Connector Color GRAY Terminal No. Wire 4 B 5 Y 6 COLOR OF	Connector No. C15	Connector No. C20 Connector Name WIR	Color of Wire	
Color of Wire B B B B B Color of Wire B B B B B B B B B B B B B B B B B B B	Connector No. C15 Connector Name WIRE TO Connector Color GRAY Connector Color GRAY Terminal No. Wire 4 B 5 Y 6 COLOR OF	Connector No. C15	JIRE	Signal Name	
Connector Connector Connector Connector Connector Sound No.		WIRE TO WIRE		Color of Wire B	
	IRE (100 100 100 100 100 100 100 100 100 10	C1 WIRE TO V BLACK BLACK C300 C300 C300 C300 C300 C300 C300 C3	Connector N Connector C	Terminal No 4 5 5	

	•				
		Connector No.	B161		
ATION LAMP		Connector Name		HIGH-MOUNTED STOP LAMP ASSEMBLY	
		Connector Color	or WHITE	Е	
		斯 H.S.	1 2		ı
al Name		Terminal No.	Color of Wire	Signal Name	
1		-	_	1	_
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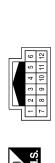
	REAR COMBINATIC	NN		Signal Na	_	ı	-
CZOZ		BROWN	1 5	Color of Wire	Я	В	>
<u>.</u>	Ĕ	양		0			
Collinector No.	Connector Name	Connector Color	原 H.S.	Terminal No.	1	2	8

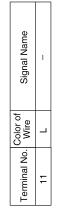
Connector No.	H	
Connector Name		REAR COMBINATION LAMP LH
Connector Color	lor BROWN	٧N
H.S.	- 2	
Terminal No.	Color of Wire	Signal Name
	\	ı
2	В	_
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Revision: December 2012 **EXL-111** 2013 Frontier





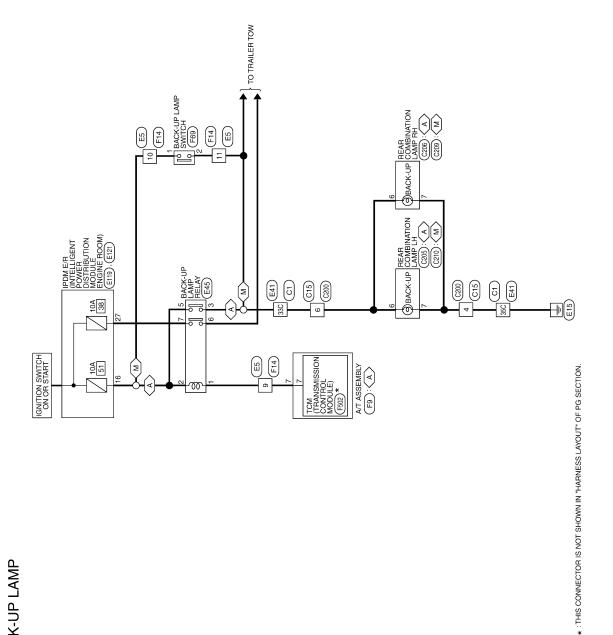


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BACK-UP LAMP Wiring Diagram INFOID:0000000008790436

A S: WITH A√T

M S: WITH M/T



BACK-UP LAMP

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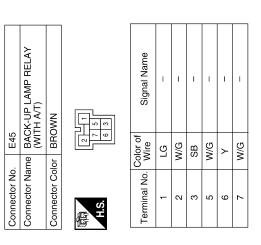
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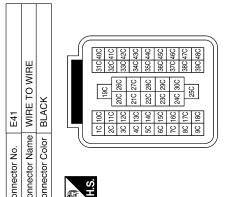
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EXL-113 2013 Frontier Revision: December 2012

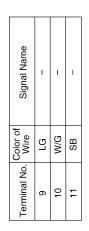
BACK-UP LAMP CONNECTORS

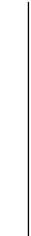
Connector No.	E5
Connector Name	onnector Name WIRE TO WIRE
Connector Color WHITE	WHITE





Signal Name	1	1
Color of Wire	SB	В
Terminal No.	33C	32C



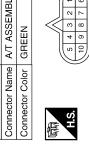




IPDM E/R (INTELLIGENT

E121

Connector No.



8			<u>o</u>	
Connector Col		H.S.	Terminal No.	7
MODULE ENGINE ROOM)		27 26 25 32 31 30	Signal Name	T TOW REV LAMP
POWER I	or BROWN	29 28	r of	
ше	or	36	Color of Wire	W/G

Signal Name

Color of Wire

ŋ

Connector Nam	Connector Colc	

	0
昏 H.S.	Terminal No.

27

Connector No.	. E119	6
Connector Name		IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color WHITE	lor WHI	12
所 R.S.	9 8 7 6 15 16 15	9 8 7 6 6 6 6 4 3 18 17 16 15 14 13 12 11 10
Terminal No. Wire	Color of Wire	Signal Name
16	M/G	REVERSE LAMP

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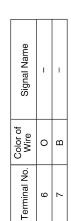
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Connector No. F502	Connector No. C200 Connector Name WIRE TO WIRE Connector Color GRAY H.S. Terminal No. Color of Signal Name 4 B - 6 SB - 6 SB -
Connector No. F69 Connector Name BACK-UP LAMP SWITCH Connector Color WHITE Terminal No. Wire Signal Name 1 W/G - 2 SB -	Connector No. C15 Connector Name WIRE TO WIRE Connector Color GRAY H.S. (4 3 2 1) Reminal No. Wire Signal Name 4 B - 4 6 SB
Connector No. F14 Connector Name WIRE TO WIRE Connector Color WHITE	Connector No. C1 Connector Name WIRE TO WIRE Connector Color BLACK Local State Local

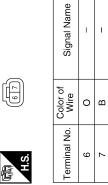
Revision: December 2012 **EXL-115** 2013 Frontier

Connector No.	C209
Connector Name	Connector Name REAR COMBINATION LAMP RH (WITH M/T)
Connector Color GRAY	GRAY

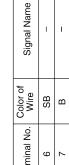


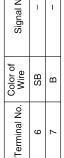


Connector No.	C206
connector Name	Connector Name REAR COMBINATION LAMP RH (WITH A/T)
Connector Color GRAY	GRAY











Signal Name	ı	_
Color of Wire	SB	В
erminal No.	9	7





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< WIRING DIAGRAM > TRAILER TOW Α Wiring Diagram INFOID:0000000008790437 STOP LAMP SWITCH (E38): < A), TO BACK-UP LAMP QR SWITH QR25DE ZV SWITH VQ40DE M31 E152 В 2G TRAILER 3 PRELAY 2 PRELAY 2 E164 ELECTRIC BRAKE (PRE-WIRING) С M31 : WITH A/T D TRAILER (C126) C125 C51 C150 15A Е သွ E41 િ % M M 5 TRAILER SI TURN RH RH 3 (E165) TRAILER RECEPTACLE TRAILER TOW RELAY 2 (E228) F IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) (E121), (E122), (E124) [S] [D] [A] Н 10A E225 E168 TAIL LAMP J K 32G IGNITION M31 IGNITION SWITCH ON OR START 육 DATA LINE , M20 W EXL (FZB) BCM (BODY CONTROL MODULE) (M18), (M19) ₿ DATA LINE 20A 2 3 4 5 6 7 10 9 COMBINATION SWITCH (LIGHTING (M2B) AND TURN SIGNAL SWITCH) M 20A 52 BATTERY TO CAN SYSTEM Ν FUSE BLOCK (J/B) (M4) TRAILER TOW 10A 0

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M6

9 0 0

TRAILER TOW CONNECTORS

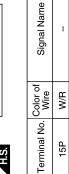
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	(B)		2P 1	
) []		æ	
	LOC			
	ΕB	핃	6P 5P 4P	
4	NS	Ħ	55	
≥	Ŧ	>	99	
	ЭE	or	7P	
Connector No.	Connector Name FUSE BLOCK (J/B)	Connector Color WHITE	E	

Connector Name WIRE TO WIRE

Connector Color WHITE







Signal Name

Terminal No. Color of Wire

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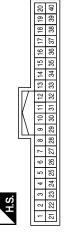
Connector No. M19 Connector Name BCM (BODY CONTROL MODULE) Connector Color WHITE	9 M (BODY CONTROL DULE)



Signal Name	TRAILER FLASHER OUTPUT (RIGHT)	TRAILER FLASHER OUTPUT (LEFT)
Color of Wire	0	PT
Terminal No. Wire	51	52

Signal Name	OUTPUT 5	OUTPUT 4	S TUATUO	OUTPUT 2	OUTPUT 1	MS NOI	CAN-H	CAN-L
Color of Wire	0	GR	В	BR	ГG	W/R	٦	Ь
Terminal No. Wire	32	33	34	35	36	38	39	40

Connector No. M18 Connector Name BCM (BOI MODULE)	
Connector Name BCM (BODY CONTROL MODULE)	
	Y CONTROL
Connector Color WHITE	

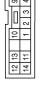


Signal Name	INPUT 5	INPUT 4	INPUT 3	INPUT 2	INPUT 1
Color of Wire	Ь	SB	>	_	œ
Terminal No. Wire	2	3	4	5	9

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Signal Name	ı	I	I	I
Color of Wire		Ь	SB	>
Terminal No. Wire	7	8	6	10

Connector No.	M28
Connector Name	Connector Name COMBINATION SWITCH
Connector Color WHITE	WHITE
	10 10 10 10 10 10 10 10 10 10 10 10 10 1



Signal Name

Terminal No.

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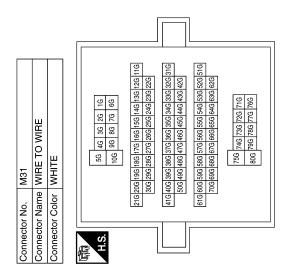
0 8 0 E



1	BCM (BODY CONTROL MODULE)	4CK	66 57 68 69 70 68 69 7	Signal Name	GND (POWER)	BAT (F/L)
MZO		lor BLACK	56 57 58 65 66	Color of Wire	В	M
Connector No.	Connector Name	Connector Color	原动 H.S.	Terminal No. Wire	29	02

_									
	ELECTRIC BRAKE (PRE-WIRING)	ITE	3 4 6	Signal Name	_	-	_	ı	_
M76	<u>e</u>		2 -	Color of Wire	В	LG	BB	æ	0
14 2000	Connector Name	Connector Color	原 H.S.	Terminal No. Color of Wire	Ļ	2	3	4	5

Signal Name	ı	ı	ı	ı	ı	-
Color of Wire	0	BR	0	LG	_	В
Terminal No. Color of Wire	1G	2G	31G	32G	40G	62G



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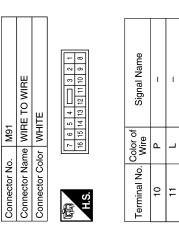
0	Connector Name WIRE TO WIRE	WHITE	1 4 5 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Signal Name	_
). E10	ıme WII	lor WF		Color of Wire	Ν
Connector No.	Connector Na	Connector Color	雨 H.S.	Terminal No. Wire	9

olgilai Naille	1			STOP LAMP SWITCH (WITH A/T)	E		Signal Name	1	
Wire	M				lor WHITE	& t 4 2	Color of Wire	B/B	
- di	9		Connector No.	Connector Name	Connector Color	崎 H.S.	Terminal No.	-	

Connector No. Connector Name Connector Color Connector Color Connector Name Connector Name Connector No. Connector	M167	JOINT CONNECTOR-M02	BLUE	9 8 7 6 5 4 3 2 1	19 18 17 16 15 14 13 12 11 10	olor of Signal Name	-		-	-
minal No.		me JOI		I I ├─	19 18	Color of Wire	Ь	Ь	_	_
	Connector No.	Connector Name	Connector Color	Ь	8	Terminal No.	-	2	10	-1-

	STOP LAMP SWITCH (WITH M/T)	Ж		Signal Name	-	1
. E38		lor BLACK	2	Color of Wire	B/B	>
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	-	2

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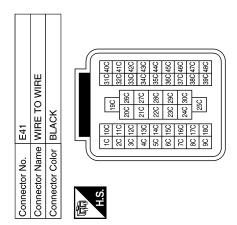


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	WIRE TO WIRE	Ē	1 1 1 2 1 3 1 4 1 5 1 6 7 1 1 1 1 2 1 3 1 4 1 5 1 6 1 6 7	Signal Name	I	I
. E26		lor WHITE	8 10 3	Color of Wire	۵	_
Connector No.	Connector Name	Connector Color	原 H.S.	Terminal No.	10	11

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Connector No.	, E121	1
Connector Name		IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	lor BROWN	NWC
斯 H.S.	29 28 G	29 28 CT 26 25 36 35 34 33 32 31 30
Terminal No.	Color of Wire	Signal Name
27	5/M	T TOW REV LAMP
29	9	TRAILER RLY CONT

	_	_			_	_	
Signal Name	I	I	-	-	_	-	_
Color of Wire	σ	>	>	۸	В	œ	BR
Terminal No.	2C	30	4C	19C	20C	21C	22C



Connector No.	. E124	4
Connector Name		PDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	lor BLACK	CK
H.S.	62 6	25 61 60 26 16 60
Terminal No. Wire	Color of Wire	Signal Name
22	GR	TAIL LAMP
59	В	GND (POWER)
61	R/B	TRAIL RLY SUPPLY

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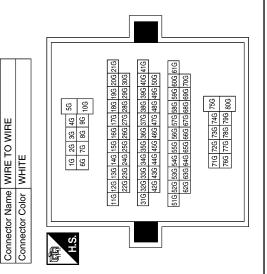
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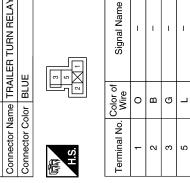
Connector No.). E160	0
Connector Name		FUSE BLOCK (J/B)
Connector Color WHITE	olor WHI	TE
(京山 H.S.	80 07 07	8070 60 50 40
Terminal No. Wire	Color of Wire	Signal Name
8	B/B	ı

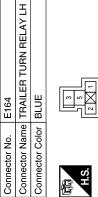
				_	_	
Signal Name	-	I	I	-	_	_
Color of Wire	0	BR	0	LG	7	ш
Terminal No.	1G	2G	31G	32G	40G	62G

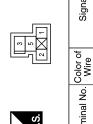
Connector No. E152

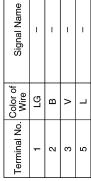


Connector No.	E165
Connector Name	Connector Name TRAILER TURN RELAY RH
Connector Color BLUE	BLUE









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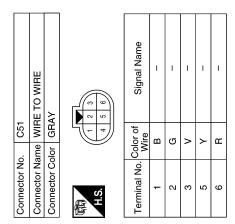
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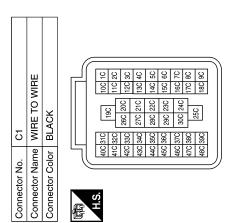
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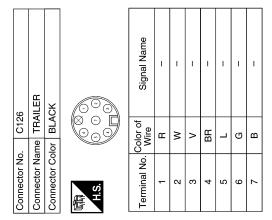
Connector Name WIRE TO WIRE	ame WIR	E TO WIRE	Connecto	V Nome N	Connector Name WIRE TO WIRE	Connector	Name BAC	VALID LAND DELAY
Coppector Color WHITE	NH.		100000				(W)	(WITH M/T)
	5	<u></u>				Connector Color	Color BLUE	Æ
H.S.	12 11	10 9 8 7 6	品.	6 7 8	3 4 5 8 9 10 11 12	原 H.S.		
Terminal No.	Color of Wire	Signal Name	Terminal No.	No. Color of Wire	of Signal Name			
-	m	ı	-	В	ı	Terminal No.	Vo. Color of Wire	Signal Name
2	W/G	ı	2	W/G	1	-	В	I
ဇ	B/B	1	က	R/B	ı	2	BB	ı
4	GB	1	4	GR	ı	က	M/G	ı
5	>	ı	2	۸	ı	2	SB	ı
9	۵	1	9	BB	ı			
7	M/G	ı	7	M/G	ı			
∞	>	1	80	SB	ı			
6	>	ı	6	_	-			
10	œ	I	10	В	1			
11	>	ı	=	0	ı			
12	5	ı	12	В	1			
Connector No.	o. E227		Connector No.		E228			
Connector Na	ame TRA	Connector Name TRAILER TOW RELAY 1	Connecto	r Name T	Connector Name TRAILER TOW RELAY 2			
Connector Color	olor BLUE		Connector Color	r Color B	BROWN			
原.S.			H.S.		2 1 2 1 1 1 1 1 1 1			
Terminal No.	Color of Wire	Signal Name	Terminal No.	No. Color of Wire	of Signal Name			
-	g	ı	-	M/G	ı			
2	В	1	2	В	ı			
ဇ	B/B	ı	3	GR	_			
2	æ	ı	5	_	1			
			9	Μ	_			
			7	0	ı			

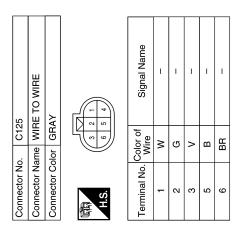
EXL-123 Revision: December 2012 2013 Frontier

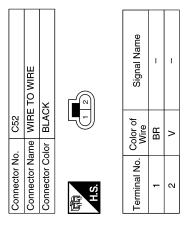


Signal Name	I	_	I	I	-	_	I
Color of Wire	ŋ	>	>	>	В	н	BR
Terminal No. Color of Wire	2C	3C	4C	19C	20C	21C	22C









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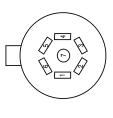
C150	WIRE TO WIRE	BLACK	
Connector No.	Connector Name WIRE TO WIRE	Connector Color	





:	Signal	I	I
Color of	Wire	ж	٦
	lerminal No.	-	2

C129	Connector Name TRAILER RECEPTACLE	BLACK	
Connector No.	Connector Name	Connector Color BLACK	H.S.



源	H.S.

Signal Name	STOP/TURN LH	GROUND	ELECTRIC BRAKE	STOP/TURN RH	BATTERY	RUNNING LAMPS	BACK-UP LAMPS
Color of Wire	-	_	_	-	_	ı	-
Terminal No. Wire	-	2	8	4	5	9	7

EXTERIOR LIGHTING SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

EXTERIOR LIGHTING SYSTEM SYMPTOMS

Symptom Table

CAUTION:

Perform the self-diagnosis with CONSULT before the symptom diagnosis. Perform the trouble diagnosis if any DTC is detected.

Symp	otom	Possible cause	Inspection item
Headlamp does not switch to the high beam.	One side	 Fuse Harness between IPDM E/R and the front combination lamp Front combination lamp IPDM E/R 	Headlamp (HI) circuit Refer to EXL-37.
	Both sides	Symptom diagnosis "BOTH SIDE HEADLAMPS DO N Refer to EXL-129, "Diagnosis Proc	
High beam indicator lamp (Headlamp switches to the		Combination meter BCM	Combination meter. Data monitor "HI-BEAM IND" BCM (HEAD LAMP) Active test "HEADLAMP"
	One side	 Daytime light relay 2 Harness between IPDM, daytime light relay 2 and front combination lamp LH. Front combination lamp (Low beam) 	Headlamp (LO) circuit Refer to <u>EXL-40</u> .
Headlamp does not switch to the low beam.	Both sides	Combination switch (lighting and turn signal switch) Harness between the combination switch (lighting and turn signal switch) and BCM BCM	Combination switch (lighting and turn signal switch) Refer to BCS-47.
		High beam request signal BCM IPDM E/R	IPDM E/R Data monitor "HL HI REQ"
		IPDM E/R	_
Headlamp does not turn ON.	One side	 Fuse Bulb Harness between IPDM E/R and the front combination lamp Front combination lamp IPDM E/R 	Headlamp (LO) circuit Refer to <u>EXL-40</u> .
	Both sides	Symptom diagnosis "BOTH SIDE HEADLAMPS (LO) A Refer to EXL-131, "Diagnosis Proc	
Headlamp does not turn OFF.	When the ignition switch is turned ON	BCM Combination switch (lighting and turn signal switch)	Combination switch (lighting and turn signal switch) Refer to BCS-47.
Daytime light system does not activate.		 Either high beam bulb Parking brake switch Combination switch (lighting and turn signal switch) BCM IPDM E/R Daytime light relay 1 Harness between IPDM E/R and daytime light relay 1. 	Daytime light system description. Refer to EXL-9, "System Description".

EXTERIOR LIGHTING SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

Symptom		Possible cause	Inspection item	
Front fog lamp is not turned ON.	One side	 Front fog lamp bulb Harness between IPDM E/R and the front combination lamp Front combination lamp IPDM E/R 	Front fog lamp circuit Refer to EXL-46.	
	Both side	Symptom diagnosis "BOTH SIDE FRONT FOG LAMPS Refer to EXL-133, "Diagnosis Proc		
Parking lamp is not turned ON.	One side	 Fuse Parking lamp bulb Harness between IPDM E/R and the front/rear combination lamp Front/rear combination lamp IPDM E/R 	Parking lamp circuit Refer to EXL-48.	
	Both sides	Symptom diagnosis "PARKING, LICENSE PLATE AND TAIL LAMPS ARE NOT TURN ON" Refer to EXL-132, "Diagnosis Procedure".		
Turn signal lamp does not blink.	Indicator lamp is normal. (The applicable side performs the high flasher activation).	Harness between BCM and each turn signal lamp Turn signal lamp bulb	Turn signal lamp circuit Refer to EXL-51.	
	One side	Combination meter	_	
Turn signal indicator lamp does not blink.	Both sides (Always)	Turn signal indicator lamp signalCombination meterBCM	Combination meter. Data monitor "TURN IND" BCM (FLASHER) Active test "FLASHER"	
	Both sides (Does blink when activating the hazard warning lamp with the ignition switch OFF)	 The combination meter power supply and the ground circuit Combination meter 	Power supply and the ground circuit Refer to MWI-30.	

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NORMAL OPERATING CONDITION

< SYMPTOM DIAGNOSIS >

NORMAL OPERATING CONDITION

Description INFOID:0000000008790439

AUTO LIGHT SYSTEM

The auto light system may not turn the headlamp ON/OFF immediately after passing a dark area or a bright area (short tunnel, sky bridge, shadowed area etc.). This is normal.

BOTH SIDE HEADLAMPS DO NOT SWITCH TO HIGH BEAM

< SYMPTOM DIAGNOSIS >

BOTH SIDE HEADLAMPS DO NOT SWITCH TO HIGH BEAM

Description INFOID:0000000008790440

The headlamps (both sides) do not switch to high beam when the combination switch (lighting and turn signal switch) is in the HI or PASS setting.

Diagnosis Procedure

INFOID:0000000008790441

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1. COMBINATION SWITCH (LIGHTING AND TURN SIGNAL SWITCH) INSPECTION

Check the combination switch (lighting and turn signal switch). Refer to <u>BCS-47, "Symptom Table"</u>.

Is the combination switch (lighting and turn signal switch) normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning part.

2.CHECK HEADLAMP (HI) REQUEST SIGNAL INPUT

(P)WITH CONSULT DATA MONITOR

- Select "HL HI REQ" of IPDM E/R DATA MONITOR item.
- 2. With operating the combination switch (lighting and turn signal switch), check the monitor status.

Monitor item	Condition		Monitor status
	Combination switch (lighting	HI or PASS	ON
HL HI REQ	and turn signal switch) (2ND position)	Except for HI or PASS	OFF

Is the item status normal?

YES >> GO TO 3.

NO >> Replace BCM. Refer to BCS-49, "Removal and Installation".

3.HEADLAMP (HI) CIRCUIT INSPECTION

Check the headlamp (HI) circuit. Refer to EXL-37, "Description".

Is the headlamp (HI) circuit normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair or replace the malfunctioning part.

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DAYTIME LIGHT SYSTEM INOPERATIVE

< SYMPTOM DIAGNOSIS >

DAYTIME LIGHT SYSTEM INOPERATIVE

Description INFOID:000000008790442

The daytime light system is inoperative even though the combination switch (lighting and turn signal switch) and parking brake switch are in the normal setting, also whenever engine is operating.

Diagnosis Procedure

INFOID:0000000008790443

NOTE:

Before performing the diagnosis, check that the following is normal.

- High beam lamp function
- · Parking brake warning lamp
- Engine operation status

1. COMBINATION SWITCH (LIGHTING AND TURN SIGNAL SWITCH) INSPECTION

Check the combination switch (lighting and turn signal switch). Refer to <u>BCS-47, "Symptom Table"</u>.

Is the combination switch (lighting and turn signal switch) normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning part.

2.CHECK DAYTIME LIGHT REQUEST SIGNAL INPUT

(P) WITH CONSULT DATA MONITOR

- Parking brake switch is released.
- Start engine.
- 3. Select "DTRL REQ" of IPDM E/R DATA MONITOR item.
- 4. While operating the combination switch (lighting and turn signal switch), check the monitor status.

Monitor item	Condition		Monitor status
	combination switch (lighting and turn	1ST or OFF	ON
DTRL REQ	signal switch)	Except for 1ST or OFF	OFF

Is the item status normal?

YES >> GO TO 3.

NO >> Replace BCM. Refer to BCS-49, "Removal and Installation".

3.DAYTIME LIGHT RELAY CIRCUIT INSPECTION

Check the daytime light relay circuit. Refer to EXL-44, "Diagnosis Procedure".

Is the daytime light relay circuit normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair or replace the malfunctioning part.

BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON

< SYMPTOM DIAGNOSIS >

BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON

Description INFOID:0000000008790444

The headlamps (both sides) do not turn ON in any combination switch (lighting and turn signal switch) setting.

Diagnosis Procedure

1. COMBINATION SWITCH (LIGHTING AND TURN SIGNAL SWITCH) INSPECTION

Check the combination switch (lighting and turn signal switch). Refer to BCS-47, "Symptom Table".

Is the combination switch (lighting and turn signal switch) normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning part.

2.CHECK HEADLAMP (LO) REQUEST SIGNAL INPUT

WITH CONSULT DATA MONITOR

- 1. Select "HL LO REQ" of IPDM E/R DATA MONITOR item.
- 2. With operating the combination switch (lighting and turn signal switch), check the monitor status.

Monitor item	Condition		Monitor status
HL LO REQ	Combination switch (lighting	2ND	ON
TIE EO NEQ	and turn signal switch)	OFF	OFF

Is the item status normal?

YES >> GO TO 3.

NO >> Replace BCM. Refer to BCS-49, "Removal and Installation".

3.HEADLAMP (LO) CIRCUIT INSPECTION

Check the headlamp (LO) circuit. Refer to EXL-40, "Description".

Is the headlamp (LO) circuit normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair or replace the malfunctioning part.

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PARKING, LICENSE PLATE AND TAIL LAMPS ARE NOT TURNED ON

< SYMPTOM DIAGNOSIS >

PARKING, LICENSE PLATE AND TAIL LAMPS ARE NOT TURNED ON

Description INFOID:000000008790446

The parking, license plate and tail lamps do not turn ON in with any combination switch (lighting and turn signal switch) setting.

Diagnosis Procedure

INFOID:0000000008790447

1.combination switch (Lighting and turn signal switch) inspection

Check the combination switch (lighting and turn signal switch). Refer to <u>BCS-47</u>, "Symptom Table". <u>Is the combination switch (lighting and turn signal switch) normal?</u>

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning part.

2.CHECK TAIL LAMP RELAY REQUEST SIGNAL INPUT

(P)WITH CONSULT DATA MONITOR

- I. Select "TAIL & CLR REQ" of IPDM E/R DATA MONITOR item.
- 2. With operating the combination switch (lighting and turn signal switch), check the monitor status.

Monitor item	Condition		Monitor status
TAIL & CLR	Combination switch (lighting and turn	1ST	ON
REQ	signal switch)	OFF	OFF

Is the item status normal?

YES >> GO TO 3.

NO >> Replace BCM. Refer to BCS-49, "Removal and Installation".

${f 3.}$ PARK LAMP CIRCUIT INSPECTION

Check the parking lamp circuit. Refer to EXL-48, "Description".

Is the tail lamp circuit normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair or replace the malfunctioning part.

BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON

< SYMPTOM DIAGNOSIS >

BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON

Description INFOID:0000000008790448

The front fog lamps do not turn ON in any combination switch (lighting and turn signal switch) setting.

Diagnosis Procedure

1. COMBINATION SWITCH (LIGHTING AND TURN SIGNAL SWITCH) INSPECTION

Check the combination switch (lighting and turn signal switch). Refer to BCS-47, "Symptom Table".

Is the combination switch (lighting and turn signal switch) normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning part.

2.CHECK FRONT FOG LAMP REQUEST SIGNAL INPUT

(P)WITH CONSULT DATA MONITOR

1. Select "FR FOG REQ" of IPDM E/R DATA MONITOR item.

2. With operating the combination switch (lighting and turn signal switch), check the monitor status.

Monitor item	Condition		Monitor status
5D 500 D50	Combination switch (lighting	ON	ON
FR FOG REQ	and turn signal switch) (2ND)	OFF	OFF

Is the item status normal?

YES >> GO TO 3.

NO >> Replace BCM. Refer to BCS-49, "Removal and Installation".

3.FRONT FOG LAMP CIRCUIT INSPECTION

Check the front fog lamp circuit. Refer to EXL-46, "Description".

Is the front fog lamp circuit normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair or replace the malfunctioning part.

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PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

Precaution for Work

- When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth.
- When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it.
- Protect the removed parts with a shop cloth and prevent them from being dropped.
- Replace a deformed or damaged clip.
- If a part is specified as a non-reusable part, always replace it with a new one.
- Be sure to tighten bolts and nuts securely to the specified torque.
- After installation is complete, be sure to check that each part works properly.
- Follow the steps below to clean components:
- Water soluble dirt:
- Dip a soft cloth into lukewarm water, wring the water out of the cloth and wipe the dirty area.
- Then rub with a soft, dry cloth.
- Oily dirt:
- Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%) and wipe the dirty area.
- Then dip a cloth into fresh water, wring the water out of the cloth and wipe the detergent off.
- Then rub with a soft, dry cloth.
- Do not use organic solvent such as thinner, benzene, alcohol or gasoline.
- For genuine leather seats, use a genuine leather seat cleaner.

General precautions for service operations

INFOID:0000000008790452

- Never work with wet hands.
- Turn the lighting switch OFF before disconnecting and connecting the connector.

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PRECAUTIONS

< PRECAUTION >

- When checking the headlamp on/off operation, check it on vehicle and with the power connected to the vehicle-side connector.
- Do not touch the headlamp bulb glass surface with bare hands or allow oil or grease to get on it. Do not touch the headlamp bulb just after the headlamp is turned off, because it is very hot.
- When the bulb has burned out, wrap it in a thick vinyl bag and discard. Do not break the bulb.
- Leaving the bulb removed from the headlamp housing for a long period of time can deteriorate the performance of the lens and reflector (dirt, clouding). Always prepare a new bulb and have it on hand when replacing the bulb.
- Do not use organic solvent (paint thinner or gasoline) to clean lamps and to remove old sealant.

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PREPARATION

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PREPARATION

Special Service Tool

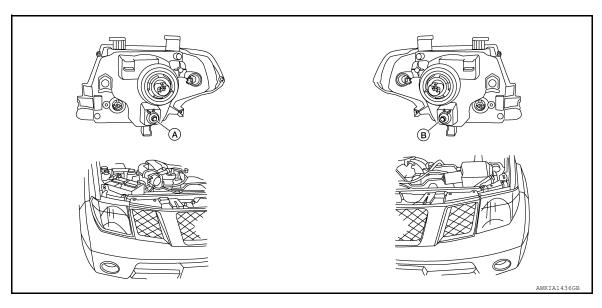
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Tool number (Kent-Moore No.) Tool name	Description
— (J-46534) Trim Tool Set	Removing trim components

PERIODIC MAINTENANCE

HEADLAMP

Aiming Adjustment



A. Headlamp (RH) adjustment screw

B. Headlamp (LH) adjustment screw

NOTE:

For headlamp aiming details, refer to the regulations in your area.

- If vehicle front body has been repaired or the front combination lamp has been replaced, check headlamp aiming.
- Before performing aiming adjustment, check the following:
- Confirm headlamp aiming switch is set to "0" (zero) position.
- Ensure all tires are inflated to correct pressure.
- Place vehicle and screen on level surface.
- Ensure there is no load in vehicle other than the driver (or equivalent weight placed in driver's position). Coolant and engine oil filled to correct level, and fuel tank full.
- Confirm spare tire, jack and tools are properly stowed.
- Aim each headlamp individually and ensure other headlamp beam pattern is blocked from screen.
- Use adjusting screw to perform aiming adjustment

LOW BEAM AND HIGH BEAM

CAUTION:

Do not tighten adjustment screw beyond a torque of 1.67 N·m (17 kg-cm, 15 in-lb) or damage may occur.

NOTE:

By regulation, no means for horizontal aim adjustment is provided from the factory; only vertical aim is adjustable.

- 1. Turn headlamp low beam on.
- 2. Use adjustment screw to perform aiming adjustment.
- Adjust beam pattern until cut-off line (top edge of illumination area) is positioned at same height off ground as bulb center (on H-line). Measure cut-off line within distance A on H-line. See aiming chart below.
 - Basic illuminating area for adjustment should be within the range shown on the aiming chart. Adjust headlamps accordingly.

Headlamp Aiming

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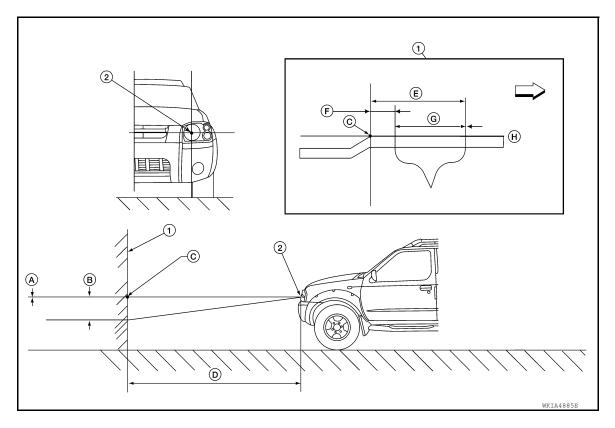
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- 1 Adjustment screen
- B Maximum acceptable vertical aim dimension (see aiming chart)
- E Maximum aim evaluation distance F from vertical center on aiming screen 399 mm (3° R).
- H Horizontal aiming evaluation line
- 2 Headlamp bulb center (HV point)
- C H-V point
 - Minimum aim evaluation distance from vertical center on aiming screen 133 mm (1°R)
- < ☐ Right

- Minimum acceptable vertical aim dimension (see aiming chart)
- D Distance of headlamp aiming screen from vehicle 7.62 m (25 ft)
 - Aim evaluation area

Aiming Chart

Ī	A (Minimum acceptable vertical aim dimension)	-3.3 mm (0.13 in)	0.025° up
	B (Maximum acceptable vertical aim dimension)	36.6 mm (1.44 in)	0.275° down

FRONT FOG LAMP

Aiming Adjustment

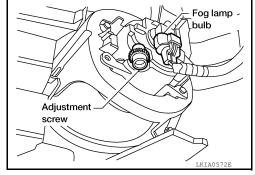
The fog lamp is a semi-sealed beam type which uses a replaceable halogen bulb. Before performing aiming adjustment, make sure of the following.

- · Keep all tires inflated to correct pressure.
- · Place vehicle on level ground.
- See that vehicle is unloaded (except for full levels of coolant, engine oil and fuel, and spare tire, jack, and tools). Have the driver or equivalent weight placed in driver seat.

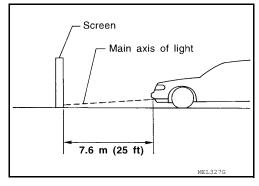
Adjust aiming in the vertical direction by turning the adjustment screw.

NOTE:

Use a Phillips screwdriver to adjust. Turn screw clockwise to raise pattern and counterclockwise to lower pattern.



1. Set the distance between the screen and the center of the fog lamp lens as shown.



- 2. Turn front fog lamps ON.
- Remove front portion of fender protector(s) for adjustment screw access. Refer to <u>EXT-25</u>, "Removal and <u>Installation"</u>.

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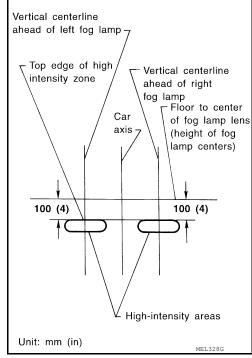
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FRONT FOG LAMP

< PERIODIC MAINTENANCE >

- 4. Adjust front fog lamps using adjustment screw so that the top edge of the high intensity zone is 100 mm (4 in) below the height of the fog lamp centers as shown.
 - When performing adjustment, if necessary, cover the headlamps and opposite fog lamp.



REMOVAL AND INSTALLATION

HEADLAMP

Bulb Replacement

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WARNING:

Do not touch bulb with your hand while it is on or right after being turned off. Burning may result. **CAUTION:**

Do not touch the glass surface of the bulb with bare hands or allow oil or grease to get on it to prevent damage to the bulb.Do not leave bulb out of lamp reflector for a long time because dust, moisture, smoke, etc. may affect the performance of lamp. When replacing bulb, be sure to replace it with new one.

HEADLAMP

Removal

- 1. Turn front headlamp switch OFF.
- Disconnect the harness connector from the headlamp.
- Rotate the headlamp bulb retaining ring counterclockwise and remove.
- Pull the headlamp bulb straight out from the headlamp assembly. **CAUTION:**

Grasp only the plastic base when handling headlamp bulb. Do not touch the glass envelope.

Installation

Installation is in the reverse order of removal.

CAUTION:

After installing bulb, be sure to install the bulb socket and plastic cap securely to ensure watertightness.

FRONT TURN SIGNAL/PARKING LAMP

Removal

- Turn the bulb socket counterclockwise and remove.
- Pull the bulb to remove it from the socket.

Installation

Installation is in the reverse order of removal.

CAUTION:

After installing bulb, be sure to install the bulb socket and plastic cap securely to ensure watertightness.

FRONT SIDE MARKER LAMP

Removal

- Turn the bulb socket counterclockwise and remove.
- Pull the bulb to remove it from the socket.

Installation

Installation is in the reverse order of removal.

CAUTION:

After installing bulb, be sure to install the bulb socket securely for watertightness.

Removal and Installation

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FRONT COMBINATION LAMP

Removal

- Position front fender protector aside. Refer to EXT-27, "Removal and Installation of Front Fender Protec-
- For steel bumper, remove the front bumper upper valance. Refer to EXT-15, "Removal and Installation". 2.
- For plastic bumper, remove the front bumper assembly. Refer to EXT-15, "Removal and Installation".

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HEADLAMP

< REMOVAL AND INSTALLATION >

- Remove the front combination lamp bolts.
- 5. Disconnect the harness connector from the front combination lamp and remove.

Installation

Installation is in the reverse order of removal.

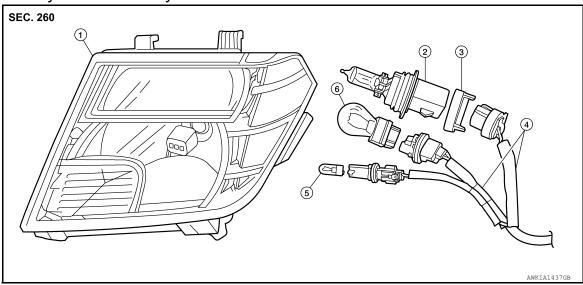
NOTE:

After installation, perform headlamp aiming adjustment. Refer to EXL-137, "Aiming Adjustment".

Front combination lamp bolt : 6.0 N·m (0.61 kg-m, 53 in-lb)

Disassembly and Assembly

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- 1. Front combination lamp
- 2. Headlamp bulb
- hulh
- 3. Headlamp bulb retaining ring

- 4. Wiring harness assembly
- 5. Front side marker lamp bulb
- 6. Front turn signal/parking lamp bulb

DISASSEMBLY

WARNING:

Do not touch bulb with your hand while it is on or right after being turned off. Burning may result. CAUTION:

Do not touch the glass surface of the bulb with bare hands or allow oil or grease to get on it to prevent damage to the bulb.Do not leave bulb out of lamp reflector for a long time because dust, moisture, smoke, etc. may affect the performance of lamp. When replacing bulb, be sure to replace it with new one.

- 1. Rotate headlamp bulb retaining ring counterclockwise and remove.
- 2. Turn front turn signal/parking lamp bulb socket counterclockwise to unlock and remove.
- 3. Turn front side marker lamp bulb socket counterclockwise to unlock and remove.

ASSEMBLY

Installation is in the reverse order of removal.

CAUTION:

After installing bulb, be sure to install the bulb socket and plastic cap securely to ensure watertightness.

FRONT FOG LAMP

Bulb Replacement

REMOVAL

1. Position front fender protector aside. Refer to <u>EXT-27</u>, "Removal and Installation of Front Fender Protector".

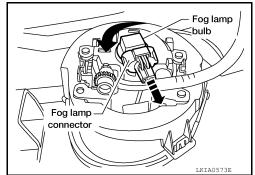
- Disconnect the harness connector from the fog lamp.
- Turn the bulb counterclockwise to remove it.

WARNING:

Do not touch bulb by hand while it is lit or right after being turned off. Burning may result.

CAUTION:

- Do not touch the glass of bulb directly by hand. Keep grease and other oily substances away from it.
- Do not leave bulb out of fog lamp reflector for a long time because dust, moisture smoke, etc. may affect the performance of fog lamp. When replacing bulb, be sure to replace it with new one.



INSTALLATION

Installation is in the reverse order of removal.

Removal and Installation

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REMOVAL

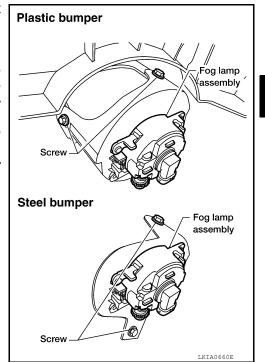
Note:

The fog lamp is a semi-sealed beam type which uses a replaceable halogen bulb.

- 1. Position front fender protector aside. Refer to <u>EXT-27</u>, "Removal and Installation of Front Fender Protector"
- 2. Disconnect the harness connector from the fog lamp.
- 3. Remove fog lamp screws and pull fog lamp rearward out of front bumper.

CAUTION:

- Do not leave fog lamp assembly without bulb for a long period of time. Dust, moisture, smoke, etc. entering the fog lamp body may affect the performance. Remove the bulb from the headlamp assembly just before replacement bulb is installed.
- Grasp only the plastic base when handling the bulb. Do not touch the glass envelope. Touching the glass could significantly affect the bulb life and/or fog lamp performance.



INSTALLATION

Installation is in the reverse order of removal.

NOTE:

After installation, perform front fog lamp aiming adjustment. Refer to EXL-139, "Aiming Adjustment".

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STOP LAMP

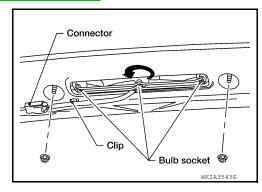
Bulb Replacement

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HIGH-MOUNTED STOP LAMP

Removal

- Remove high-mounted stop lamp. Refer to <u>EXL-144, "Removal and Installation"</u>.
- 2. Rotate the center bulb socket counterclockwise and remove.
- 3. Pull bulb straight out from bulb socket.



Installation

Installation is in the reverse order of removal.

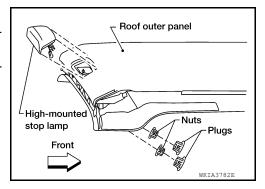
Removal and Installation

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HIGH-MOUNTED STOP LAMP

Removal

- 1. Remove plugs on headlining.
- Remove the nuts and remove high-mounted stop lamp from outside of roof outer panel.
- Rotate the bulb sockets counterclockwise and remove the highmounted stop lamp assembly.



Installation

Installation is in the reverse order of removal.

High-mounted stop lamp nuts : 3.38 N·m (0.34 kg-m, 30 in-lb)

LICENSE PLATE LAMP

< REMOVAL AND INSTALLATION >

LICENSE PLATE LAMP

Bulb Replacement

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REMOVAL

- 1. Turn bulb socket counterclockwise to unlock bulb socket.
- 2. Pull bulb to remove from bulb socket.

INSTALLATION

Installation is in the reverse order of removal.

Removal and Installation

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REMOVAL

- 1. Disconnect the harness connector from the license plate lamp.
- 2. Depress tab to remove license plate lamp from rear bumper.

INSTALLATION

Installation is in the reverse order of removal.

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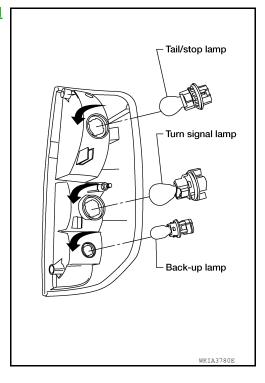
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REAR COMBINATION LAMP

Bulb Replacement

REMOVAL

- 1. Remove rear combination lamp. Refer to <u>EXL-146</u>, "Removal and Installation".
- 2. Turn bulb socket counterclockwise to remove..
- 3. Pull bulb straight out away from socket.



INSTALLATION

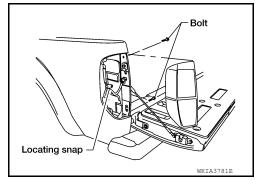
Installation is in the reverse order of removal.

Removal and Installation

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REMOVAL

- 1. Open tail gate and remove rear combination lamp bolts.
- 2. Pull combination lamp housing rearward to release locating snap.
- 3. Rotate each bulb socket counterclockwise and remove.



INSTALLATION

Installation is in the reverse order of removal.

NOTE:

During installation, align locating snap on body prior to installing bolts.

Rear combination lamp bolts : 2.4 Nm (0.24 kg-m, 21 in-lb)

LIGHTING & TURN SIGNAL SWITCH

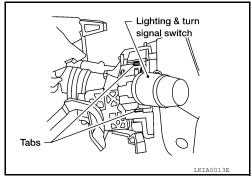
< REMOVAL AND INSTALLATION >

LIGHTING & TURN SIGNAL SWITCH

Removal and Installation

1. Remove instrument lower panel LH. Refer to IP-18, "Removal and Installation".

- 2. Remove steering column covers.
- 3. Disconnect the harness connector from the lighting and turn signal switch.
- 4. While pressing tabs, pull lighting and turn signal switch toward driver door and release from the steering column.



INSTALLATION

REMOVAL

Installation is in the reverse order of removal.

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HAZARD SWITCH

< REMOVAL AND INSTALLATION >

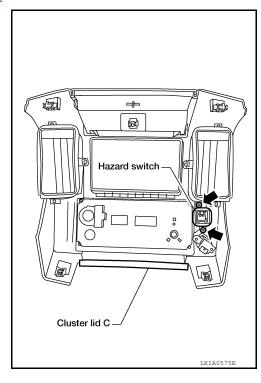
HAZARD SWITCH

Removal and Installation

INFOID:0000000008790468

REMOVAL

- 1. Remove cluster lid C. Refer to IP-19, "Removal and Installation".
- 2. Remove the screws and the hazard switch.



INSTALLATION

Installation is in the reverse order of removal.

OPTICAL SENSOR

< REMOVAL AND INSTALLATION >

OPTICAL SENSOR

Removal and Installation

INFOID:0000000008790469

REMOVAL

- 1. Insert a suitable tool between the optical sensor and the instrument panel, then lift the optical sensor upward.
- 2. Disconnect the harness connector from the optical sensor and remove.

INSTALLATION

Installation is in the reverse order of removal.

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SERVICE DATA AND SPECIFICATIONS (SDS)

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SERVICE DATA AND SPECIFICATIONS (SDS)

Bulb Specifications

INFOID:0000000008790471

	Item	Wattage (W)*
Front combination lamp	Headlamp (Halogen low beam)	55
	Headlamp (Halogen high beam)	60
	Park/Turn lamp	28/8
	Front side marker lamp	5
Rear combination lamp	Stop/Tail lamp	27/8
	Rear turn signal lamp	27
	Back-up lamp	18
Fog lamp		55
License plate lamp		5
High-mounted stop lamp		12.8
Cargo lamp (in high-mounted sto	pp lamp)	12.8

^{*:} Always check with the Parts Department for the latest parts information.